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The Reliability and Factor  
Structure of the Job Activity  
Preference Questionnaire (JAPQ) and  
the Job Behavior Experience  
Questionnaire (JBEQ)

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Department of Psychology  
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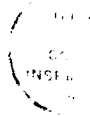
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Six separate factor analyses were conducted on the items from the six "divisions" of the JAPQ and also the JBEQ. A total of 36 "divisional dimensions" of the JAPQ were identified. The factor structure of the JBEQ included 39 divisional dimensions. These data are discussed in terms of the potential use of these instruments as measures of job transition difficulty and the need for additional psychometric work.



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The Reliability and Factor Structure of the Items of the Job Activity Preference Questionnaire (JAPQ) and the Job Behavior Experience Questionnaire (JBEQ)

James B. Shaw  
and  
Charles H. Goretsky

Schein (1968) has defined organizational socialization as "the process of 'learning the ropes', the process of being indoctrinated and trained, the process of being taught what is important in the organization or some subunit there of". (p. 2). Since socialization is generally viewed as a learning process (Brim, 1966; Martinier & Simmons, 1979; Van Maanen & Schein, 1979), one relevant question to ask is "precisely what must be learned". Dornbush (1955) distinguishes between two types of socialization contents - (1) skills and technical knowledge and (2) attitudes, values and shared history. Etzioni (1975) suggests that socialization involves the learning of how to participate in two kinds of communication networks: (1) instrumental (task-related) as (2) expressive (attitudes and values). Feldman (1980) categorizes socialization learning processes into four areas which can easily be condensed into (1) skills, abilities, and role behaviors as (2) group norms and group/organizational values

The present study was concerned specifically with factors which affect employees' learning of skills, abilities and knowledge necessary to perform the tasks assigned to them in a new organizational setting. Specifically, this study was an initial attempt to develop measures of an employee's preferences for specific task activities and past experience with those activities assuming that such preferences and previous experience may influence the ease with which an employee is able to learn a new job. The difficulty which an individual has in learning new task behaviors may affect the overall socialization process. Individuals who must concentrate much of their energies into learning how to do the job, will have less time to attend to those other aspects of the new work environment which

they must learn, e.g., norms, values, goals. Difficulty in learning the job may act to delay the "overall" socialization of the individual into the new organizational setting.

Weick (1979) suggests that as employees become experienced in performing a job, they develop "schemata" about how to do things and what are appropriate job responses. Louis (1980) also discuss the development of "routines" by job incumbents which strongly influence their job behaviors. It could be argued then, that when an individual moves from one job to another, the difficulty of adjusting to the new job requirements may depend upon the extent to which "routines" developed in previous jobs "fit" the new job situation. In order to examine this hypothesis, adequate measures of the behaviors required by the new job and of the employee's level of past experience with those behaviors are necessary.

An additional factor which might influence the degree to which an employee can be "socialized into" a new job is the preference which the employee has towards the activities required by the new job. Gross (1975) suggests that an important stage of the socialization process is the eventual acceptance of the new role by the employee. Individuals who find themselves in new jobs which require many activities for which they have a very low preference, may be less likely to accept that new position than if the job included many high preference activities.

Another way in which preferences for job activities may affect the socialization of an individual into a new job setting concerns the degree of preference which the individual had for activities in the old job. Some research suggests that ease of socialization is not totally determined by what the individual is moving into, but also by factors relating to what the individual is leaving behind (Cogswell, 1967). One might suggest that an individual moving from a job with a high job activity preference level to one with a lower activity preference level would have greater difficulty in being socialized into that new job than if

the reverse situation were true. In order to test these hypotheses, a measure of the preferences an employee has for certain job activities is needed, as well as a measure of the types of behaviors required by the old and new jobs.

The purpose of the present study was to investigate two measures - one of job activity preferences and one of job activity experiences - which might be useful in testing the hypotheses developed in the preceding pages. Specifically, in this study, we investigated the test-retest reliability of the Job Activity Preference Questionnaire (JAPQ, Mecham, Harris, McCormick & Jeanneret, 1972) and the newly developed Job Behavior Experience Questionnaire (JBEQ). Also, sufficient data was collected to examine the factor structure of these two instruments.

### Method

#### Instruments

The JAPQ and JBEQ were selected for examination in this study because of their close association with the Position Analysis Questionnaire (McCormick, Jeanneret and Mecham, 1969) (PAQ). In order to test, in nature studies, the hypotheses developed in the introduction of this paper it is necessary to:

- (1) have a measure of job activity preferences,
- (2) have a measure of job activity experiences,
- (3) have a measure of actual job characteristics,
- (4) be able to relate the above measures easily to one another, and
- (5) be able to use the same instruments to measure experiences, preferences and actual job characteristics across a large number of jobs.

The PAQ is a structured "worker-oriented" job analysis device which was developed specifically so that it could be used to analyze essentially any job. (For a detailed description of the PAQ, see McCormick, Jeanneret & Meham, 1969). The JAPQ and JBEQ were developed directly from the items of the PAQ and thus allow us to make direct comparisons between activity preferences, past activity experiences and actual job behaviors as measured by the PAQ. Thus the JAPQ, JBEQ, and

PAQ would allow us to test any hypotheses concerning the relationship among preferences, experiences, job behaviors and ease of socialization into new job situations. Unfortunately, very little work has been done on either the JAPQ or JBEQ to determine their "psychometric characteristics".

#### Job Activity Preference Questionnaire (JAPQ)

The JAPQ was developed by Mecham, Harris, McCormick and Jeanneret (1972). It is a parallel instrument of the Position Analysis Questionnaire (PAQ). One hundred-fifty items from the PAQ were revised slightly in their wording. Respondents are asked to rate how important they would like certain activities to be on a job or how much they would like to engage in different activities on a job. Only 150 of the 194 PAQ items were used since some items were not amendable to a "preference" format. Six-point rating scales were used in the JAPQ. The JAPQ is presented in Appendix A.

#### Job Behavior Experience Questionnaire

Some work had been conducted at Purdue University (Note 1) toward the development of an "experience questionnaire" closely tied to the behaviors represented on the PAQ. In the present study, a formal Job Behavior Experience Questionnaire (JBEQ), parallel to both the PAQ and JAPQ was developed. Except for items 138 and 139, the same items used in the JAPQ were used in the JBEQ. Items 138 and 139 were not amendable to an "experience format. Respondents were asked to rate, using a six-point (0 = none, 6 = very extensive) the degree of past experience they had with each of the job aspects represented by the 150 items. Items 134-136 were modified slightly from the JAPQ version to make them more easily rated in terms of past experience. The JBEQ is presented in Appendix B.

#### Combined JAPQ/JBEQ Format

Because of the length of the JAPQ and JBEQ, it was decided to combine the two questionnaires into a single instrument so that subjects could rate both

preference and experience for each of the items at the same time. The combined version of the JAPQ/JBEQ is presented in Appendix C.

### Subjects

Two hundred sixty-two male and female college students participated in the study. Ages ranged from 17-22 with most of the subjects 17-20 years of age. Students participated in the study for credit in an undergraduate psychology course.

### Procedure

Eighty-nine subjects participated in the test-retest reliability phase of the study. These subjects were tested on two occasions, four days apart. Approximately 45 subjects at a time responded to the combined JAPQ/JBEQ during one hour sessions. These subjects then returned four days later to again respond to the JAPQ/JBEQ. Ninety-six subjects attended Session 1 with 89 of these returning for Session 2.

An additional 173 subjects responded to the JAPQ/JBEQ a few weeks later. None of the subjects in this additional group had participated in the test-retest phase. Subjects in this second group responded to the JAPQ/JBEQ only once. Session 1 data from the 89 subjects in the test-retest phase were combined with the data from the second groups of 173 subjects to provide a total data base of 262 subjects for factor analytic procedures.

### Results

Data on 89 subjects who twice responded to the JAPQ/JBEQ instrument, four days apart, were analyzed to examine the means, standard deviations and test-retest reliabilities associated with each of the 150 JAPQ and 148 JBEQ items. The means, standard deviations and item test-retest reliabilities for the JAPQ items are presented in Table 1. Data for the JBEQ are presented in Table 2.

Data from 89 subjects who participated in Session 1 of the test-retest phase of this study were combined with JAPQ/JBEQ data from 173 subjects tested later during a single administration of the combined instrument. Data on the JAPQ and JBEQ for these 262 subjects were analyzed using factor analytic procedures. A principal axis factor analysis procedure was used on the data. Minimum eigen value necessary to be retained in the analysis was set at 1.0. Factors were rotated using a varimax procedure. These analyses were conducted using the Statistical Analysis System Factor Procedure (SAS manual, 1979, pp. 203-210).

The items of the Position Analysis Questionnaire are structured into six major "divisions" representing Information Input, Mental Processes, Work Output, Relationships with Other Workers, Job Context, and Other Job Characteristics. The items of the JAPQ and JBEQ retain this "divisional" structure. The number of subjects for whom JAPQ and JBEQ data were available was not sufficient to permit the inclusion of all 150 items on each instrument into an "overall" factor analysis. Instead, the items on each questionnaire were broken down into their corresponding PAQ-related "divisions" and each set of items within a division were factor analyzed separately. Thus, a total of twelve factor analyses were conducted - six on the items within each of the JAPQ divisions and six on the items within each of the JBEQ divisions. This procedure has frequently been conducted on PAQ data itself, with the resulting factors being called "divisional job dimensions." A list of the JAPQ items in each of the six divisions is found in Table 3 along with a corresponding list of the JBEQ items. The results of these "divisional" factor analyses on the items of the JAPQ are presented in Table 4. The results of corresponding analyses on JBEQ items are presented in Table 5.

Table 1

MEANS, STANDARD DEVIATIONS AND TEST-RETEST RELIABILITIES FOR JAPQ ITEMS

<u>JAPQ Item</u>	<u>Session 1</u>		<u>Session 2</u>		<u>Test-retest</u>
	<u><math>\bar{X}</math></u>	<u>SD</u>	<u><math>\bar{X}</math></u>	<u>SD</u>	<u>Reliability</u>
1	3.3	1.1	3.2	1.0	.71
2	3.0	1.3	2.8	1.1	.55
3	2.9	1.2	2.8	1.1	.65
4	2.6	1.2	2.4	1.1	.43
5	2.8	1.4	2.6	1.3	.46
6	2.7	1.3	2.3	1.3	.51
7	2.2	1.4	1.9	1.4	.42
8	3.2	1.3	2.9	1.2	.52
9	3.7	1.2	3.2	1.4	.45
10	3.0	1.2	2.6	1.3	.34
11	4.0	1.0	3.4	1.3	.29
12	3.3	1.2	2.7	1.2	.20
13	3.0	1.5	2.6	1.6	.61
14	3.3	1.2	3.1	1.2	.27
15	2.8	1.2	2.5	1.3	.46
16	3.6	1.3	3.0	1.3	.49
17	3.2	1.4	2.4	1.4	.38
18	3.1	0.5	2.3	1.6	.52
19	2.8	1.3	2.3	1.4	.65
20	2.7	1.7	2.2	1.4	.80
21	2.9	1.4	2.8	1.3	.60
22	2.9	1.6	2.3	1.4	.54
23	2.6	1.5	2.3	1.5	.61
24	2.6	1.5	2.3	1.3	.67
25	2.3	1.7	1.9	1.6	.60
26	3.0	1.5	2.7	1.4	.55
27	3.3	1.4	2.9	1.5	.65
28	1.6	1.5	1.8	1.5	.62
29	1.9	1.4	1.8	1.4	.60
30	2.3	1.5	2.2	1.4	.47

Table 1 (Continued)

MEANS, STANDARD DEVIATIONS AND TEST-RETEST RELIABILITIES FOR JAPQ ITEMS

<u>JAPQ Item</u>	<u>Session 1</u>		<u>Session 2</u>		<u>Test-retest</u>
	<u><math>\bar{X}</math></u>	<u>SD</u>	<u><math>\bar{X}</math></u>	<u>SD</u>	<u>Reliability</u>
31	2.5	1.4	2.4	1.4	.52
32	2.4	1.4	2.2	1.3	.54
33	3.2	1.2	2.8	1.3	.45
34	3.6	1.2	3.5	1.0	.59
35	4.0	0.9	3.7	1.0	.50
36	3.6	1.3	3.5	1.2	.50
37	2.8	1.3	2.3	1.4	.51
38	2.4	1.4	2.1	1.4	.56
39	3.1	1.4	2.7	1.4	.48
40	2.9	1.3	2.2	1.4	.53
41	2.8	1.3	2.0	1.4	.63
42	3.1	1.3	2.6	1.4	.55
43	3.4	1.3	2.6	1.5	.54
44	3.6	1.2	3.1	1.5	.61
45	3.0	1.3	2.6	1.6	.56
46	2.2	1.3	2.0	1.3	.48
47	2.6	1.4	2.5	1.4	.60
48	2.7	1.5	2.6	1.6	.73
49	3.4	1.4	3.0	1.4	.53
50	3.0	1.4	2.6	1.6	.72
51	2.9	1.4	2.5	1.4	.46
52	3.9	1.0	3.8	1.1	.47
53	4.1	0.9	3.7	1.1	.66
54	3.6	1.1	3.3	1.4	.56
55	3.8	1.3	3.3	1.4	.76
56	3.2	1.4	3.1	1.4	.72
57	2.8	1.4	2.6	1.5	.68
58	3.7	1.1	3.6	1.1	.52
59	3.2	1.4	2.9	1.4	.69
60	3.8	1.0	3.4	1.2	.46

Table 1 (Continued)

MEANS, STANDARD DEVIATIONS AND TEST-RETEST RELIABILITIES FOR JAPQ ITEMS

<u>JAPQ Item</u>	<u>Session 1</u>		<u>Session 2</u>		<u>Test-retest</u>
	<u><math>\bar{X}</math></u>	<u>SD</u>	<u><math>\bar{X}</math></u>	<u>SD</u>	<u>Reliability</u>
61	2.6	1.3	2.2	1.5	.65
62	2.5	1.2	2.2	1.4	.48
63	3.0	1.4	2.8	1.6	.66
64	2.3	1.3	2.0	1.4	.46
65	3.0	1.4	2.6	1.5	.61
66	3.3	1.3	3.1	1.3	.63
67	3.6	1.1	3.4	1.2	.36
68	3.9	1.1	3.7	1.3	.76
69	3.8	1.0	3.7	1.0	.55
70	3.9	1.1	3.7	1.1	.66
71	3.9	1.0	3.6	1.2	.47
72	3.5	1.0	3.3	1.1	.47
73	3.0	1.1	3.0	1.1	.65
74	3.2	1.2	3.0	1.2	.66
75	3.6	1.5	3.2	1.6	.64
76	3.2	1.4	2.7	1.6	.54
77	3.3	1.3	3.0	1.3	.43
78	3.5	1.3	3.3	1.4	.51
79	2.9	1.5	2.8	1.5	.67
80	3.0	1.3	2.6	1.3	.66
81	2.6	1.4	2.2	1.3	.66
82	2.4	1.3	2.3	1.2	.60
83	2.1	1.4	2.1	1.4	.68
84	3.0	1.3	2.7	1.3	.68
85	2.6	1.2	2.5	1.3	.48
86	2.9	1.2	2.8	1.3	.60
87	2.1	1.7	1.9	1.6	.76
88	2.5	1.7	2.0	1.5	.71
89	1.6	1.4	1.4	1.4	.67
90	1.8	1.2	1.8	1.4	.67

Table 1 (Continued)

MEANS, STANDARD DEVIATIONS AND TEST-RETEST RELIABILITIES FOR JAPQ ITEMS

<u>JAPQ Item</u>	<u>Session 1</u>		<u>Session 2</u>		<u>Test-retest</u>
	<u><math>\bar{X}</math></u>	<u>SD</u>	<u><math>\bar{X}</math></u>	<u>SD</u>	<u>Reliability</u>
91	2.0	1.6	1.7	1.5	.68
92	2.0	1.6	1.7	1.6	.74
93	3.3	1.3	3.4	1.2	.52
94	2.3	1.4	2.2	1.4	.73
95	3.1	1.4	2.9	1.5	.58
96	2.5	1.4	2.4	1.4	.66
97	2.5	1.5	2.3	1.5	.61
98	2.9	1.2	2.7	1.4	.52
99	3.2	1.3	3.0	1.4	.50
100	2.6	1.5	2.3	1.6	.51
101	2.0	1.5	1.6	1.5	.68
102	2.3	1.7	2.0	1.7	.72
103	2.5	1.8	2.2	1.8	.69
104	1.4	1.3	1.4	1.3	.56
105	1.4	1.3	1.3	1.4	.71
106	1.7	1.4	1.4	1.4	.65
107	2.8	1.0	2.9	1.0	.64
108	2.7	1.1	2.6	1.0	.75
109	2.5	1.3	2.3	1.2	.71
110	1.1	1.2	1.2	1.4	.46
111	1.2	1.1	1.4	1.1	.59
112	0.5	0.8	0.6	1.0	.66
113	0.6	0.9	0.8	1.1	.75
114	2.5	1.6	2.4	1.7	.73
115	0.4	0.8	0.5	1.1	.48
116	0.5	0.7	0.5	0.8	.50
117	0.7	0.9	0.8	1.1	.56
118	0.8	1.1	0.8	1.0	.65
119	0.6	1.0	0.8	1.1	.56
120	3.0	1.4	3.2	1.3	.75

Table 1 (Continued)

MEANS, STANDARD DEVIATIONS AND TEST-RETEST RELIABILITIES FOR JAPQ ITEMS

JAPQ Item	Session 1		Session 2		Test-retest
	$\bar{X}$	SD	$\bar{X}$	SD	Reliability
121	2.8	1.5	2.8	1.5	.65
122	2.2	1.3	2.2	1.5	.55
123	0.6	0.9	0.5	0.9	.65
124	0.4	0.9	0.4	0.9	.65
125	1.3	1.2	1.4	1.2	.63
126	1.2	1.1	1.3	1.2	.55
127	1.9	1.3	2.0	1.3	.56
128	3.0	1.1	3.0	1.2	.62
129	3.4	1.0	3.2	1.1	.50
130	3.3	1.1	3.1	1.2	.56
131	3.3	1.2	3.1	1.3	.56
132	3.8	0.9	3.7	1.0	.56
133	3.0	1.2	3.0	1.1	.79
134	4.1	0.8	3.9	0.9	.51
135	3.9	0.7	3.9	0.9	.38
136	4.0	0.8	3.8	0.8	.54
137	4.0	0.6	4.1	0.7	.67
138	2.8	1.3	2.7	1.2	.69
139	1.4	1.1	1.4	1.1	.43
140	3.4	0.9	3.7	0.8	.69
141	2.6	0.9	2.6	0.9	.61
142	3.2	1.5	3.2	1.4	.81
143	1.6	1.4	1.8	1.4	.21
144	2.4	1.4	2.2	1.4	.68
145	3.5	1.4	3.4	1.4	.91
146	4.0	0.8	4.0	0.9	.72
147	2.0	0.9	1.8	0.9	.57
148	3.4	0.8	3.3	0.8	.52
149	3.5	1.0	3.6	0.9	.77
150	2.7	1.2	2.4	1.3	.65

Table 2

MEANS, STANDARD DEVIATIONS AND TEST-RETEST RELIABILITIES FOR JBEQ ITEMS\*

JBEQ Item	Session 1		Session 2		Test-retest Reliability
	$\bar{X}$	SD	$\bar{X}$	SD	
1	2.9	1.3	2.9	1.3	.47
2	2.5	1.3	2.3	1.4	.43
3	1.8	1.4	2.1	1.3	.56
4	1.5	1.2	1.7	1.3	.42
5	1.6	1.4	1.8	1.4	.47
6	2.3	1.6	2.1	1.4	.64
7	2.0	1.4	1.8	1.5	.60
8	3.0	1.3	2.6	1.5	.51
9	2.5	1.6	2.2	1.7	.61
10	1.9	1.4	1.8	1.6	.53
11	2.8	1.5	2.6	1.7	.64
12	2.4	1.4	2.1	1.5	.45
13	2.3	1.5	1.8	1.6	.57
14	3.5	1.1	3.0	1.4	.23
15	2.4	1.4	2.0	1.6	.58
16	2.9	1.5	2.7	1.6	.45
17	2.6	1.6	2.2	1.7	.47
18	2.6	1.6	2.1	1.7	.52
19	2.4	1.6	2.3	1.4	.65
20	2.0	1.7	2.0	1.4	.62
21	2.4	1.6	2.3	1.5	.53
22	2.2	1.5	1.8	1.5	.61
23	1.9	1.5	1.8	1.4	.52
24	1.4	1.6	1.5	1.5	.52
25	1.9	1.6	1.8	1.6	.66
26	1.9	1.5	1.6	1.3	.48
27	2.1	1.5	1.7	1.3	.61
28	1.1	1.3	1.4	1.4	.61
29	1.2	1.3	1.4	1.3	.57
30	1.7	1.5	1.6	1.4	.54

\*Item numbers correspond to combined JAPQ/JBEQ (Appendix C).

Table 2 (Continued)

MEANS, STANDARD DEVIATIONS AND TEST-RETEST RELIABILITIES FOR JBEQ ITEMS

<u>JBEQ Item</u>	<u>Session 1</u>		<u>Session 2</u>		<u>Test-retest</u>
	<u><math>\bar{X}</math></u>	<u>SD</u>	<u><math>\bar{X}</math></u>	<u>SD</u>	<u>Reliability</u>
31	1.8	1.5	1.9	1.4	.58
32	2.0	1.4	1.9	1.4	.70
33	2.7	1.4	2.4	1.5	.51
34	2.5	1.4	2.2	1.4	.53
35	2.6	1.4	2.2	1.4	.59
36	2.6	1.3	2.3	1.4	.51
37	1.6	1.6	1.5	1.5	.63
38	1.7	1.5	1.8	1.6	.66
39	2.6	1.6	2.3	1.5	.48
40	2.6	1.3	2.1	1.5	.57
41	2.3	1.4	2.0	1.4	.56
42	2.6	1.4	2.1	1.4	.55
43	3.3	1.1	2.7	1.5	.46
44	3.2	1.3	2.8	1.5	.65
45	2.2	1.5	2.2	1.6	.67
46	1.8	1.4	1.6	1.4	.54
47	2.3	1.5	2.3	1.6	.59
48	2.2	1.6	2.1	1.7	.65
49	3.6	1.4	3.0	1.6	.39
50	2.6	1.6	2.3	1.7	.61
51	2.5	1.5	2.1	1.5	.62
52	2.6	1.3	2.2	1.2	.64
53	2.8	1.1	2.3	1.4	.51
54	2.5	1.3	2.1	1.3	.60
55	2.5	1.2	2.0	1.2	.66
56	1.5	1.3	1.4	1.4	.49
57	2.2	1.6	2.3	1.5	.54
58	2.0	1.5	1.7	1.3	.52
59	2.0	1.3	1.7	1.3	.71
60	2.9	1.3	2.8	1.3	.59

Table 2 (Continued)

MEANS, STANDARD DEVIATIONS AND TEST-RETEST RELIABILITIES FOR JBEQ ITEMS

<u>JBEQ Item</u>	<u>Session 1</u>		<u>Session 2</u>		<u>Test-retest Reliability</u>
	<u><math>\bar{X}</math></u>	<u>SD</u>	<u><math>\bar{X}</math></u>	<u>SD</u>	
61	1.9	1.3	1.6	1.4	.66
62	1.4	1.4	1.1	1.3	.61
63	2.2	1.5	2.0	1.5	.64
64	2.2	1.7	2.0	1.6	.61
65	2.2	1.5	1.9	1.4	.59
66	2.2	1.5	1.9	1.4	.54
67	1.9	1.6	1.6	1.4	.46
68	1.9	1.4	1.7	1.5	.58
69	2.3	1.4	2.2	1.4	.59
70	3.2	1.3	3.0	1.2	.56
71	2.7	1.4	2.4	1.4	.48
72	2.3	1.4	2.3	1.3	.61
73	3.0	1.3	2.8	1.3	.59
74	1.9	1.4	1.9	1.5	.57
75	3.6	1.5	3.4	1.5	.55
76	2.9	1.5	2.8	1.6	.43
77	3.0	1.6	3.0	1.4	.54
78	2.1	1.5	1.8	1.4	.61
79	1.2	1.3	1.1	1.3	.66
80	2.7	1.7	2.6	1.5	.46
81	2.1	1.7	2.0	1.7	.80
82	3.1	1.3	2.9	1.4	.56
83	1.9	1.4	1.8	1.5	.48
84	1.9	1.3	1.7	1.4	.50
85	1.8	1.4	1.8	1.4	.48
86	3.4	1.3	3.1	1.4	.63
87	1.2	1.3	1.3	1.5	.75
88	2.7	1.6	2.5	1.5	.70
89	2.8	1.6	2.7	1.5	.81
90	2.0	1.5	1.9	1.5	.68

Table 2 (Continued)

MEANS, STANDARD DEVIATIONS AND TEST-RETEST RELIABILITIES FOR JBEQ ITEMS

JBEQ Item	Session 1		Session 2		Test-retest Reliability
	$\bar{X}$	SD	$\bar{X}$	SD	
91	1.3	1.5	1.2	1.4	.61
92	1.7	1.6	1.8	1.6	.84
93	3.0	1.6	3.1	1.5	.77
94	2.4	1.4	2.3	1.5	.72
95	2.4	1.5	2.3	1.4	.66
96	1.5	1.4	1.6	1.4	.55
97	2.7	1.6	2.7	1.6	.61
98	2.8	1.4	2.7	1.5	.66
99	3.2	1.3	3.0	1.5	.47
100	2.7	1.6	2.4	1.7	.47
101	2.0	1.6	1.8	1.5	.80
102	1.6	1.6	1.2	1.4	.67
103	0.8	1.3	0.8	1.2	.84
104	2.7	1.5	2.6	1.6	.73
105	1.2	1.5	1.0	1.5	.74
106	0.8	1.1	0.8	1.1	.62
107	2.8	1.5	2.6	1.4	.61
108	3.6	1.2	3.6	1.2	.60
109	3.0	1.4	2.9	1.4	.63
110	1.2	1.5	1.7	1.4	.71
111	2.2	1.3	2.0	1.3	.67
112	1.1	1.5	1.2	1.5	.77
113	0.8	1.2	0.9	1.3	.76
114	2.5	1.7	2.5	1.9	.87
115	0.9	1.2	0.7	1.1	.70
116	0.6	1.1	0.6	1.0	.75
117	1.0	1.1	1.1	1.2	.62
118	1.4	1.5	1.5	1.6	.78
119	1.1	1.4	1.2	1.5	.74
120	1.7	1.6	1.5	1.6	.65

Table 2 (Continued)

MEANS, STANDARD DEVIATIONS AND TEST-RETEST RELIABILITIES FOR JBEQ ITEMS

JBEQ Item	Session 1		Session 2		Test-retest Reliability
	$\bar{X}$	SD	$\bar{X}$	SD	
121	2.4	1.6	2.4	1.5	.78
122	1.9	1.7	1.8	1.6	.70
123	0.9	1.5	0.9	1.4	.83
124	0.7	1.3	0.6	1.2	.75
125	1.6	1.5	1.5	1.3	.58
126	2.7	1.5	2.3	1.4	.51
127	2.4	1.5	2.3	1.4	.51
128	2.5	1.4	2.2	1.4	.63
129	2.8	1.3	2.6	1.3	.58
130	2.4	1.2	2.1	1.4	.56
131	2.4	1.4	2.4	1.5	.63
132	2.5	1.3	2.2	1.5	.58
133	2.2	1.4	1.9	1.4	.63
134 a)	3.7	1.3	3.4	1.4	.46
b)	3.3	1.4	3.1	1.4	.47
c)	3.2	1.3	3.1	1.3	.60
d)	1.8	1.5	1.8	1.4	.69
e)	0.6	1.0	0.6	1.0	.52
135 a)	3.8	1.1	3.5	1.4	.51
b)	3.6	1.2	3.3	1.3	.56
c)	3.4	1.2	3.2	1.4	.58
d)	2.2	1.5	2.0	1.6	.65
e)	1.0	1.2	0.9	1.3	.60
136 a)	2.6	1.9	2.9	1.8	.51
b)	3.0	1.3	3.2	1.5	.49
c)	3.1	1.3	3.1	1.2	.58
d)	2.7	1.5	2.4	1.6	.63
e)	2.0	1.8	1.8	1.8	.72
f)	1.6	1.7	1.2	1.6	.59
137	3.0	0.2	2.9	0.4	.29
140	3.6	0.8	3.6	0.8	.78

Table 2 (Continued)

MEANS, STANDARD DEVIATIONS AND TEST-RETEST RELIABILITIES FOR JBEQ ITEMS

<u>JBEQ Item</u>	<u>Session 1</u>		<u>Session 2</u>		<u>Test-retest Reliability</u>
	<u><math>\bar{X}</math></u>	<u>SD</u>	<u><math>\bar{X}</math></u>	<u>SD</u>	
141	3.3	1.0	3.2	1.1	.87
142	1.3	1.2	1.6	1.4	.66
143	0.7	0.8	0.8	0.8	.69
144	1.7	1.3	1.5	1.3	.64
145	2.9	1.3	2.6	1.4	.79
146	3.2	1.0	2.9	1.1	.63
147	2.8	1.0	2.7	0.7	.38
148	2.5	0.7	2.5	0.8	.16
149	2.2	1.0	2.3	1.0	.67
150	1.4	1.3	1.6	1.4	.63

Table 3

JAPQ and JBEQ Items Included in Each of the Six PAQ-Related Divisions

Derived From Division(s)	Division Description	Items From Which Dimensions are Derived
1	Information Input (JAPQ)	1-33
	(JBEQ)	1-33
2	Mental processes (JAPQ)	34-37,134-140
	(JBEQ)	34-37,134-137,140
3	Work Output (JAPQ)	38-51,87-111,141
	(JBEQ)	38-51,87-111,141
4	Relationships with other Persons (JAPQ)	52-81,133,142-147
	(JBEQ)	52-81,133,142-147
5	Job Context (JAPQ)	82-86,112-119,121-124,150
	(JBEQ)	82-86,112-119,121-124,150
6	Other Job Characteristics (JAPQ)	120,125-132,148-149
	(JBEQ)	120,125-132,148-149

Table 4

The Divisional Dimensions of the JAPQ

Division 1: Information Input Dimensions (Eight dimensions accounted for a total of 65% of Division 1 Variance)

1. Interpreting what is sensed. (19% of Division 1 Variance)

This dimension deals with situations in which the worker typically interprets the information that is received by various sensory mechanisms, such as tactile, olfactory, hearing, etc.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading*</u>
Item 16 - Touching	.84
Item 17 - Smelling	.84
Item 13 - Viewing art, decorating, etc.	.83
Item 15 - Listening to non-verbal sound	.78
Item 14 - Listening to spoken info	.70
Item 26 - Judging condition/quality	.64
Item 30 - Estimating speed of processes	.61
Item 31 - Estimating quality	.56
Item 29 - Estimating speed of moving objects	.46

2. Watching Devices/Materials for Information (10% of Division 1 Variance)

This dimension refers to the worker's use of written and/or pictorial displays of information in the job.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 5 - Using visual displays	.69
Item 2 - Using numerical materials	.69
Item 3 - Using graphic materials	.69
Item 4 - Using patterns and related devices	.69
Item 6 - Using measuring devices	.63
Item 1 - Reading	.59

\* Only items with factor loadings greater than .45 are included.

### 3. Observing Physical Environment (7% of Division 1 Variance)

The dominant aspect of this dimension is that of observing features of the relevant environment (physical, behavioral features).

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 8 - Observing things you're working with	.71
Item 10 - Observe/inspect man-made features of environment	.71
Item 7 - Observe/listen to mech. devices in use	.66
Item 9 - Observing features of nature	.58
Item 11 - Observe behavior of others/animals	.51

### 4. Using Various Senses (5% of Division 1 Variance)

This dimension is characterized by the need for sensory acuity and perception, utilizing different sensory modalities, for job information.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 18 - Tasting	.82
Item 20 - Using depth perception	.49
Item 24 - Sensing body movement	.48
Item 19 - Distance vision	.47

### 5. Estimating Time (5% of Division 1 Variance)

This dimension represents the need to make discreet estimates of time elapsed (past, present, future).

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 33 - Estimating time	.72

### 6. Estimating Size (4% of Division 1 Variance)

This dimension relates to the need to make estimations of materials, products or related concepts size.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 32 - Estimating size	.80

### 7. Estimating Speed/Inspecting (8% of Division 1 Variance)

This dimension is characterized by estimation and inspecting of the speed/quantity of objects/processes involved in one's daily work.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 28 - Estimating speed of moving parts	.80
Item 27 - Inspecting	.74
Item 31 - Estimating quantity	.52
Item 30 - Estimating speed of processes	.48

### 8. Recognizing Sounds (7% of Division 1 Variance)

This dimension relates to the situations in which the worker typically recognizes the information that is received by sounds or sound patterns.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 23 - Recognizing sounds by loudness, pitch or tone	.78
Item 22 - Recognizing sound patterns	.67

## Division 2: Mental Processing Dimensions (Three dimensions accounted for a total of 63% of Division 2 Variance)

### 1. Processing Information (26% of Division 2 Variance)

This dimension relates to the different possible ways in which a worker may aggregate the information received in his job.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 36 - Gathering, grouping, classifying info	.83
Item 35 - Analyzing info	.81
Item 34 - Combining information	.76
Item 37 - Coding/decoding info	.75

### 2. Making Decisions (23% of Division 2 Variance)

This dimension emphasizes decision-making activities, as well as the necessary precursors to such behavior on the job.

Items Correlating Substantially with DimensionFactor Loading

Item 135 - Reasoning in problem solving	.83
Item 134 - Decision-making level	.77
Item 136 - Amount of planning	.64
Item 137 - Education	.56
Item 138 - Training	.48

3. Using Experience/Training in Information Processing (14% of Division 2 Variance)

This dimension relates the experience one needs to properly process job information.

Items Correlating Substantially with DimensionFactor Loading

Item 139 - Experience	.89
Item 138 - Training	.58
Item 140 - Level of math	.57

Division 3: Work Output Dimensions (Eight dimensions accounted for a total of 65% of Division 3 Variance)1. Performing Activities with General Body Movements (6% of Division 3 Variance)

This dimension incorporates the general, gross motor activities required in job-related activities.

Items Correlating Substantially with DimensionFactor Loading

Item 39 - Using hands to change/alter/modify things	.68
Item 109 - Walking or running	.62
Item 110 - Climbing	.55
Item 45 - Finger manipulation	.54
Item 108 - Standing	.52

2. Performing Activities with Specific, Skillful Body Movements (17% of Division 3 Variance)

This dimension is dominated by fine motor skills necessary for proper job task execution.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 40 - Controlling or guiding materials being processed	.87
Item 49 - Eye-hand/foot coordination	.85
Item 41 - Assembling/disassembling	.89
Item 44 - Highly skilled body coordination activities	.83
Item 48 - Hand/arm steadiness	.80
Item 43 - Physically handling objects, materials, etc.	.79
Item 42 - Arranging or positioning	.78
Item 38 - Setting up/adjusting equipment	.66
Item 50 - Limb movement without visual control	.47

### 3. Using Hand-held Tools (8% of Division 3 Variance)

This dimension relates to activities involving the use of variety of hand-held tools, usually of a precision type design.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 92 - Other hand-held power tools	.85
Item 93 - Writing and drawing instruments	.79
Item 91 - Hard-held precision power tools	.76
Item 90 - Handling devices or tools	.70

### 4. Using Large Tools or Equipment (6% of Division 3 Variance)

This dimension involves the use of any large equipment, including large materials handling equipment.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 141 - Physical exertion	.61
Item 89 - Long-handled tools	.57
Item 101 - Powered mobile equipment	.52
Item 102 - Powered water vehicles	.50
Item 88 - Other hand tools	.49
Item 111 - Kneeling or stooping	.46

### 5. Hand/Arm Manipulation (5% of Division 3 Variance)

This dimension incorporates those job elements which involve either hand and/or arm manipulation in job task activities.

Items Correlating Substantially with DimensionFactor Loading

Item 46 - Feeding/off-bearing	.90
Item 47 - Hand-arm manipulation	.86

6. Controlling Processes or Machines (12% of Division 3 Variance)

This dimension is dominated by activities involving the use of controlling and/or operating machines on the job.

Items Correlating Substantially with DimensionFactor Loading

Item 106 - Remote-controlled equipment	.69
Item 97 - Controls: used continuously	.64
Item 105 - Operating equipment	.63
Item 103 - Air or space vehicles	.61
Item 104 - Man-moved mobile equipment	.59
Item 98 - Controls: not used continuously	.59
Item 102 - Powered water vehicles	.56
Item 107 - Sitting	.53
Item 101 - Powered mobile equipment	.52
Item 100 - Highway or rail vehicles	.47

7. General Physical Coordination (4% of Division 3 Variance)

This dimension incorporates movements and coordination necessary on the job which are guided by typically non-visual cues.

Items Correlating Substantially with DimensionFactor Loading

Item 50 - Limb movement w/out visual control	.66
Item 51 - Hand-ear coordination	.65

8. Manually Manipulating Devices/Machines (7% of Division 3 Variance)

This dimension relates to the activities characterized by machine and device control of a manual nature.

Items Correlating Substantially with DimensionFactor Loading

Item 95 - Technical devices	.78
Item 94 - Applicators	.76
Item 99 - Keyboard devices	.58
Item 96 - Processing machines and equipment	.50

Division 4: Relationships with Others Dimensions (Ten dimensions accounted for a total of 63% of Division 4 Variance)

1. Exchanging Job-Related Information (6% of Division 4 Variance)

This dimension involves interacting with individuals from whom one must obtain job-related information.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 73 - Personnel in office work	.75
Item 75 - Customers	.60
Item 69 - Middle management	.58
Item 74 - Purchasing agents	.49

2. Exchanging Non-Verbal Information (8% of Division 4 Variance)

This dimension involves the communication of job-related information.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 61 - Signaling	.71
Item 62 - Code communications	.65
Item 57 - Exchanging routine information	.62
Item 52 - Advising	-.62

3. General Responsibility (9% of Division 4 Variance)

This dimension covers elements of responsibility which include materials and human behavior.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 143 - Personnel responsibility	.78
Item 144 - Safety responsibility	.76
Item 145 - Property responsibility	.67
Item 147 - Supervision received	.63
Item 146 - General responsibility	.61.
Item 133 - Competition	.51
Item 142 - Supervision given	.48

4. Communicating Judgments/Related Information (7% of Division 4 Variance)

This dimension is related to various types of communication activities of a persuasive nature.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 54 - Persuading	.76
Item 56 - Interviewing	.75
Item 55 - Teaching	.74
Item 53 - Negotiating	.71

5. Public/Related Personal Contacts (8% of Division 4 Variance)

This dimension deals with contacts with personnel in the public in general, including public interest groups and clients.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 79 - Special interest groups	.82
Item 78 - Clients, patients, counselees	.76
Item 80 - Sales personnel	.72
Item 81 - Skilled and unskilled workers	.59

6. Communicating Specialized Information to Executives/Officials (6% of Division 4 Variance)

This dimension deals with staff activities; those job tasks which require providing specialized technical information to officials of an organization.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 67 - Serving as a staff member	.83
Item 68 - Executives or officials	.73
Item 58 - Exchanging specialized information	.48

7. Supervising Non-employees (4% of Division 4 Variance)

This dimension involves the direction of persons over whom one does not have traditional, economic control, e.g., volunteers.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 65 - Supervising Non-employees	.73

8. Engaging in General Personal Contacts (5% of Division 4 Variance)

This dimension incorporates job-related service activities.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 64 - Serving or catering	.76
Item 63 - Entertaining	.66
Item 66 - Coordinating activities	.53

9. Communicating Information to Incognizant Others (5% of Division 4 Variance)

This dimension refers to activities concerning teaching and/or informing individuals who have less knowledge than you regarding your job-related information.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 77 - Students, trainees, apprentices	.76
Item 76 - The public generally	.68

10. Writing/Public Speaking (5% of Division 4 Variance)

This dimension involves those activities which require either some sort of writing (i.e. reports, documents) or public speaking (i.e. speeches, demonstrations).

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 60 - Writing	.76
Item 59 - Public speaking	.67

Division 5: Job Context Dimensions (Five demensions accounted for a total of 62% of Division 5 Variance)

1. Physical Working Conditions (22% of Division 5 Variance)

This dimension encorporates poor physical working conditions, such as contaminated air or working under the risk of personal injury.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 118 - Working under dirty conditions	.78
Item 115 - Working in contaminated air	.75
Item 124 - Permanent total disability or death	.74
Item 116 - Working with vibrating equipment	.73
Item 119 - Working in awkward or small work space	.67
Item 117 - Work under poor lighting conditions	.64
Item 123 - Permanent injury or illness	.51
Item 113 - Working indoors in low temperatures	.49

## 2. Being in a Stressful/Unpleasant Environment (13% of Division 5 Variance)

This dimension is dominated by circumstances in which the individual is subject to potentially stressful or unpleasant situations on the job.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 85 - Disagreements of conflict situations	.75
Item 84 - Personal sacrifice in the service of others	.75
Item 86 - Distractions	.69
Item 83 - Unpleasant personal contacts	.61

## 3. Working in a Dangerous Environment (13% of Division 5 Variance)

This dimension involves working under conditions where the worker's health is constantly threatened.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 121 - Minor injury/illness resulting in $\leq$ 1 day lost	.75
Item 122 - Injury/illness resulting in $\geq$ 1 day lost; not permanent	.75
Item 115 - Working in contaminated air	.69
Item 123 - Permanent injury/illness	.61

## 4. Engaging in Personally Demanding Situations (8% of Division 5 Variance)

This dimension relates to situations where the worker is involved in frustrating situations on the job.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 82 - Frustrating situations	.53
Item 150 - Civic obligations	-.75

## 5. Working Indoors in High Temperatures (6% of Division 5 Variance)

This factor involves situations where the worker must endure extreme heat on the job (i.e. boiler-room or engine room work)

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 112 - Working indoors in high temperatures	.82

Division 6: Other Job Characteristics Dimensions (Two dimensions accounted for a total of 53% of Division 6 Variance).

### 1. Working Under Job-Demanding Situations (29% of Division 6 Variance)

This dimension is characterized by circumstances in which the job demands are particularly demanding of attention or responsibility.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 131 - Vigilance	.79
Item 129 - Attention to detail	.71
Item 130 - Recognition	.68
Item 149 - Criticality of position	.64
Item 148 - Job structure	.61
Item 132 - Need to keep job knowledge current	.59
Item 128 - Precision	.57

### 2. Performing Sturctured vs. Unstructured work (24% of Division 6 Variance)

This dimension is characterized by the amount a job is pre-set with regard to rate of work and repetition involved.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 125 - A set, specified rate of work	.88
Item 126 - Repetitive activities	.87
Item 127 - Cycled work activities	.64
Item 128 - Precision	.54

Table 5

The Divisional Dimensions of the JBEQ

Division 1: Information Input Dimensions (Seven dimensions accounted for a total of 61% Division 1 Variance)

1. Using Various Senses (13% of Division 1 Variance)

This dimension incorporates the need to utilize different sensory modalities in order to obtain job-related information.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 14 - Listening to spoken information	.78
Item 13 - Viewing art, decorations, etc.	.78
Item 17 - Smelling	.67
Item 15 - Listening to sounds (non-verbal)	.62
item 16 - Touching	.56
Item 26 - Judging condition or quality	.54
Item 19 - Using distance vision	.51
Item 6 - Using measuring devices	.45

2. Interpreting What is Sensed (11% of Division 1 Variance)

This dimension is dominated by activities relating to the sensing, recognizing and interpreting of work-related stimuli by different sensory modalities.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 25 - Body balancing	.68
Item 23 - Recognizing sounds by loudness, pitch, etc.	.66
Item 29 - Estimating speed of moving objects	.63
Item 22 - Recognizing sound patterns	.62
Item 24 - Body movement sensing	.59
Item 7 - Observing and listening to mechanical devices in use	.49

3. Using Various Sources of Information (8% of Division 1 Variance)

This dimension reflects the degree to which the worker utilizes written, numerical and graphic materials in receiving job-related information.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 2 - Using numerical materials	.71
Item 3 - Using graphic materials	.69
Item 4 - Using patterns and related devices	.59
Item 5 - Using visual displays	.57
Item 6 - Using measuring devices	.55
Item 1 - Reading	.48

#### 4. Evaluating/Judging What is Sensed (13% of Division 1 Variance)

This dimension is dominated by circumstances in which the individual is involved in activities which require the estimation of quantity or speed, inspecting, or judging and observing materials and processes.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 31 - Estimating quantity	.83
Item 30 - Estimating speed of processes	.68
Item 27 - Inspecting	.66
Item 28 - Estimating speed of moving parts	.66
Item 21 - Using color perception	.60
Item 16 - Touching	.59
Item 26 - Judging condition or quality	.52
Item 12 - Observing events of circumstances around you	.47
Item 4 - Using patterns and related devices	.46

#### 5. Estimating Time (4% of Division 1 of Variance)

This dimension involves activities in which an individual must make discreet estimations of time, (past, present and future).

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 33 - Estimating Time	.74

#### 6. Observing Physical Environment (7% of Division 1 Variance)

This dimension is dominated by activities involving the observation of characteristics of the environment (natural and man-made) as a source of job information.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 10 - Observing or inspecting man-made features	.71
Item 8 - Observing things you are working with	.68
Item 9 - Observing features of nature	.64
Item 7 - Observing and listening to mechanical devices in use	.50
7. <u>Visual/Gustatory Sensing</u> (5% of Division 1 Variance)	

This dimension relates to the observation and estimation of materials utilizing either visual perception or tasting as a source of job information.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 32 - Estimating size	.62
Item 18 - Tasting	.51
Item 11 - Observing behavior of people/animals	.48

Division 2: Information Processing Dimensions (Three dimensions accounted for a total of 60% of Division 2 Variance)

1. Using Experience/Training in Information Processing (22% of Division 2 Variance)

This dimension relates to the degree one must utilize past training and experience in his every day work. This includes both education and on the job training/experience.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 140 - Level of mathematics	.73
Item 139 - Experience	.72
Item 138 - Training	.68
Item 137 - Education	.68

2. Processing Information (21% of Division 2 Variance)

This dimension incorporates the data aggregation activities which are associated with the use of job-related information.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 35 - Analyzing information	.85
Item 36 - Gathering, grouping, classifying information	.78
Item 37 - Coding or decoding	.75
Item 34 - Combining information	.64

### 3. Making Decisions (17% of Division 2 Variance)

This dimension incorporates the major decision-making steps and elements of that process.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 134 - Decision-making level	.76
Item 135 - Reasoning in problem solving	.74
Item 136 - Amount of Planning	.64

### Division 3: Work Output Dimensions (Ten dimensions accounted for a total of 73% of Division 3 Variance)

#### 1. General Physical Coordination (8% of Division 3 Variance)

This dimension illustrates the various cognitive-physical coordination activities found in a job. These include both gross and fine motor skills.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 51 - Hand-ear coordination	.84
Item 50 - Limb movement with and without visual control	.75
Item 49 - Eye-hand/foot coordination	.60
Item 48 - Hand-arm steadiness	.52
Item 47 - Hand-arm manipulation	.52

#### 2. Using Machines/Tools/Equipment (11% of Division 3 Variance)

This dimension involves the various activities one engages in which necessarily involve the use of larger tools and machines, including powered mobile equipment and man-moved mobile equipment.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 89 - Long-handled tools	.80
Item 90 - Handling devices or tools	.72
Item 110 - Climbing	.67
Item 104 - Man-moved mobile equipment	.64
Item 92 - Other hand-held power tools	.59
Item 101 - Powered mobile equipment	.54
Item 88 - Other hand tools	.48
Item 105 - Operating equipment	.47

### 3. Using Precise Technical Instruments (7% of Division 3 Variance)

This dimension refers to the necessary use of precise technical instruments to perform daily work, such as writing or drawing instruments, technical devices or keyboard devices.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 93 - Writing/drawing instruments	.72
Item 94 - Applicators	.67
Item 95 - Technical devices	.61
Item 99 - Keyboard devices	.60

### 4. Performing Activities Using Gross Motor Skills (6% of Division 3 Variance)

This dimension includes those activities ( walking,kneeling, stooping) which require generally gross motor activities which are necessary for task accomplishment.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 109 - Walking or running	.76
Item 111 - Kneeling or stooping	.67
Item 42 - Arranging or positioning	.52
Item 44 - Highly skilled body coordination activities	.46

### 5. Using Large, Powered Equipment (10% of Division 3 Variance)

This dimension is characterized by activities involving the use of powered vehicles (cars, trucks, boats, planes, etc) on the job.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 103 - Air or space vehicles	.81
Item 102 - Powered water vehicles	.80
Item 106 - Remote-controlled equipment	.67
Item 105 - Operating equipment	.65
Item 101 - Powered mobile equipment	.53
Item 100 - Highway or rail vehicles	.51

### 6. Manual Manipulation (13% of Division 3 Variance)

This dimension includes activities involving the direct manual manipulation of material or equipment as a task requirement.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 39 - Using hands directly to change things	.75
Item 43 - Physically handling materials, people, etc.	.73
Item 40 - Controlling or guiding materials in process	.71
Item 41 - Assembling or disassembling	.71
Item 38 - Setting up or adjusting equipment	.64
Item 48 - Hand-arm steadiness	.60
Item 46 - Feeding/off-bearing	.58
Item 42 - Arranging or positioning	.57
Item 47 - Hand/arm manipulation	.54

7. Using Controls Not Requiring Continuous Monitoring (5% of Division 3 Variance)

This dimension covers activities where the individual must utilize control mechanisms not requiring continuous monitoring (i.e. bulldozer or crane controls).

<u>Items correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 98 - Controls: not used continuously	.80

8. Performing Activities Using Fine Motor Skills (5% of Division 3 Variance)

This dimension keys in on the characteristic use of finger manipulation and precision hand tools (i.e. jewelry-making, repair).

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 87 - Precision hand tools	.81
Item 45 - Finger manipulation	.53

9. Physical Exertion (4% of Division 3 Variance)

This dimension is dominated by the element of physical exertion in job tasks.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 141 - Physical exertion	.78

10. Standing (4% of Division 3 Variance)

This dimension relates to the degree of standing one must do on the job on a daily basis.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 108 - Standing	.77

Division 4: Relationships with Others Dimensions (Ten dimensions accounted for a total of 73% of Division 4 Variance)

1. Engaging in General Personal Contacts (12% of Division 4 Variance)

This dimension deals with contacts with personnel in a variety of activities, from negotiating and persuading, to serving as a staff member and having supervisory responsibility.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 53 - Negotiating	.87
Item 54 - Persuading	.75
Item 59 - Public speaking	.69
Item 56 - Interviewing	.63
Item 67 - Serving as a staff member	.56
Item 60 - Writing	.51
Item 143 - Personnel responsibility	.46

2. General Responsibility (12% of Division 4 Variance)

This dimension covers elements of responsibility which involve other people, (not necessarily employees) including the public, volunteers, clients, and students.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 76 - The public generally	.77
Item 65 - Supervising non-employees	.73
Item 66 - Coordinating activities	.69
Item 80 - Sales personnel	.67
Item 78 - clients, patients, etc	.65
Item 81 - Skilled/unskilled workers	.52
Item 77 - Students, trainees, apprentices	.48
Item 64 - Serving or catering	.46

### 3. Supervisory Activities (7% of Division 4 Variance)

This dimension covers the basic supervisory responsibilities and activities.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 142 - Supervision given	.82
Item 144 - Safety responsibility	.73
Item 147 - Supervision received	.66
Item 143 - Personnel responsibility	.65

### 4. Interacting with Middle Management (6% of Division 4 Variance)

This dimension is characterized by job related contact with supervisory personnel.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 70 - Supervisors	.80
Item 69 - Middle management	.73

### 5. Communicating Specialized Information Executives/Officials (10% of Division 4 Variance)

This dimension deals with staff functions; those job tasks which require providing special technical information to officials.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 71 - Professional personnel	.78
Item 68 - Executives or officials	.75
Item 58 - Exchanging specialized information	.65
Item 79 - Special interest groups	.62
Item 69 - Middle management	.47

### 6. Engaging in General Interpersonal Communications/Service Activities (9% of Division Variance)

This dimension includes communication and service activities related to job performance.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 62 - Code communications	.78
Item 61 - Signaling	.72
Item 64 - Serving or catering	.64

Item 55 - Teaching	.62
Item 63 - Entertaining	.61

7. Exchanging Information (4% of Division 4 Variance)

This dimension relates to any two-way communications of either routine or non-routine information on the job.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 57 - Exchanging routine information	.70
Item 58 - Exchanging specialized information	.49

8. Communicating with Students, Trainees, Apprentices (4% of Division 4 Variance)

This dimension refers to communications involving individuals who are currently being taught.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 73 - Students, trainees, apprentices	.77

9. Competing with Others (5% of Division 4 Variance)

This dimension is dominated by situations in which an individual must compete with others as a regular job duty or is responsible for job-related property.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 133 - Competition	.76
Item 145 - Property responsibility	.73

10. Communicating with Customers (4% of Division 4 Variance)

This dimension deals with any direct interactions with customers.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 75 - Customers	.73

Division 5: Job Context Dimensions (Five dimensions accounted for a total of 65% of Division 5 Variance)

1. Working in an Unpleasant Physical Environment (23% of Division 5 Variance)

This dimension is characterized by unpleasant physical conditions.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 112 - Working indoors in high temperatures	.78
Item 115 - Working in contaminated air	.76
Item 116 - Working with vibrating equipment	.75
Item 113 - Working indoors in low temperatures	.69
Item 117 - Working under poor lighting conditions	.68
Item 119 - Working in awkward or small work spaces	.65
Item 118 - Working under dirty conditions	.63
Item 114 - Working outdoors	.59

2. Working in a Moderately Dangerous Environment (11% of Division 5 Variance)

This dimension involves situations in which there is a moderate degree of risk of disabilities caused by the work.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 121 - Minor injury or illness who might result in $\leq$ 1 day lost	.94
Item 122 - Injury or illness causing $\geq$ 1 day lost, not, permanent	.87

3. Being in an Unpleasant/Stressful Social Environment (11% of Division 5 Variance)

This dimension is dominated by circumstances in which the worker is either distracted or frustrated to a point which disrupts the normal flow of work.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 86 - Distractions	.79
Item 82 - Frustrating situations	.75
Item 83 - Unpleasant personal contacts	.57

4. Engaging in Personally Demanding Situations (9% of Division 5 Variance)

This dimension represents situations which require personal sacrifice or which involve a degree of conflict situations which demand energy above that normally required to do the job.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 84 - Personal sacrifice	.82
Item 85 - Disagreements/conflict situations	.53

5. Working in an Extremely Dangerous Environment (11% of Division 5 Variance)

This dimension relates to work situations where the risk of permanent disabling or injury is high.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 124 - Permanent total disability or death	.87
Item 123 - Permanent injury or illness	.85

Division 6: Other Job Characteristics Dimensions (Four dimensions accounted for a total of 70% of Division 6 Variance)

1. Working Under Job-Demanding Circumstances (23% of Division 6 Variance)

This dimension deals with observing and monitoring work-related details which requires constant attention to details.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 131 - Vigilance	.81
Item 129 - Attention to detail	.79
Item 130 - Recognition	.73
Item 132 - Need to keep job knowledge current	.64
Item 128 - Precision	.58

2. Performing Repetitive, Cycled, Work Activities (20% of Division 6 Variance)

This dimension relates to the degree to which the work rate is pre-determined for the worker.

<u>Items Correlating Substantially with Dimension</u>	<u>Factor Loading</u>
Item 125 - A set, specified rate of work	.83
Item 127 - Cycled work activities	.83
Item 126 - Repetitive activities	.81

3. Performing Work with High Job Structure and Criticality of Position (16% of Division 6 Variance)

This dimension relates to the degree to which a job is structured and is important (critical) to the overall operations of the organization.

Items Correlating Substantially with DimensionFactor Loading

Item 148 - Job structure

.94

Item 149 - Criticality of position

.93

4. Work Involving Travel (11% of Division 6 Variance)

This dimension deals with the need to travel as a regular part of the job duties.

Items Correlating Substantially with DimensionFactor Loading

Item 120 - Traveling

.85

## DISCUSSION

Overall, the test-retest reliability data associated with the JAPQ and JBEQ are neither encouraging or discouraging. For the JAPQ, 80.6% of the items had test-retest reliabilities above .50, while 82.6% of the JBEQ items were above .50. Two factors were probably operating to affect the magnitude of the reliabilities. The first, the relatively short time period between administrations, served probably to inflate the magnitude of the reliabilities. Future studies of the JAPQ/JBEQ need to investigate the reliabilities resulting from longer "between test" periods. The second factor, the sample used in the study, served probably to deflate the items reliabilities. Although the individuals in the sample were of an age at which career choice is certainly a relevant topic, the fact that the subjects were participating in a "psychology experiment", and were administered the instruments in groups of between 40-50, may have had the effect of diverting the subjects' attention away from the task at hand. Additionally, the length of the JAPQ/JBEQ instrument may have resulted in some fatigue on the part of the subjects. There is not strong support for a fatigue hypothesis, however, since no consistent pattern of lower reliabilities for items placed later on the questionnaire emerged.

The factor analytic data on the JAPQ/JBEQ is interesting in two respects. One is that the factors within each division of the PAQ contained very few "overlapping" items. Compared to divisional factor analyses conducted on PAQ data, in which it was not uncommon for one or more items to be found to significantly load on several different factors, these initial factor analyses of the JAPQ/JBEQ show remarkably little such overlapping of "significantly loading" items. The second interesting result of the analyses was the relative similarity of the factor structures of both the JAPQ and JBEQ. The JAPQ contained 36

divisional dimensions while the JBEQ contained 39 dimensions. Although no similarity index could be computed, an examination of the factors in both instruments do seem to evidence a high degree of congruence. One must be cautious, however, since the combined nature of the instrument (Appendix C) used in the present study may have somewhat artificially increased the factor similarity. The factor analysis results should also be viewed cautiously since in the case of some divisions, the typical 10:1 subject/item ratio for factor analysis procedures was violated. Additional research with the JAPQ and JBEQ is presently being developed in order to overcome some of the problems and short comings of the present study. Larger samples are being sought and the combined JAPQ/JBEQ instrument will be given to individuals who are actively engaged in career choice decisions. Test-retest reliability studies, involving longer between-test administration periods are being planned. The results of the present study should be viewed simply as an initial step towards the development of psychometrically adequate versions of the JAPQ and JBEQ. Once these measures are refined, they may prove useful as measures of job transition and socialization difficulties.

## REFERENCE NOTES

1. A preliminary version of the JBEQ was developed by Dr. Angelo DeNisi (University of South Carolina) while he was a graduate student at Purdue University.

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## APPENDIX A

## Job Activity Preference Questionnaire (JAPQ)

# Job Activity Preference Questionnaire (JAPQ)

(The JAPQ is an interest inventory that provides for the expression of interests in the job elements of the Position Analysis Questionnaire, which is a structured job analysis instrument.)

Robert C. Mecham, Alma F. Harris, Ernest J. McCormick, P. R. Jeanneret

The purpose of this questionnaire is to obtain a measure of your job interests or preferences. Each individual has different interests, so there are no right or wrong answers. Simply mark what applies to you.

The questionnaire is divided into 9 sections, each of the sections containing a listing of work activities or situations. For each section there is a rating scale that you are to use in rating how much you would want each of the work activities or situations to be a part of a job that you might sometime have.

In rating the work activities and situations, do not attempt to relate your responses directly to any specific job or occupation. Rather, consider each item separately, and indicate the level of your interest in the activity or situation as a part of any job that you might consider. As you rate each work activity or situation, assume that an opportunity would be available for you to get any required education or training.

## PERSONAL DATA

Last Name		First Name		Middle Name		Social Security Number			Age
Employer, if presently employed						Occupation, if employed			
Name _____									
City _____ State _____									
Education (Check One)						Vocational, technical, or related training (Number of months)			
3 or less years	Some high school	High school grad.	Some college	College degree	Advanced degree				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>			
School or College, if presently a student						Today's Date			
Name _____									
City _____ State _____									
Your Address						Sex (Check One)			
City _____ State _____						Male <input type="checkbox"/> Female <input type="checkbox"/>			

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## SECTION 1

Information is needed to perform any type of work, and that information can come from many different sources. Use the numbers from 0 to 5 on the rating scale to mark how much you would like to use or engage in each of the following activities to get the "information" needed in your work. Place the scale value that you choose in the space provided beside each question.

## Rating Scale

- 0 None
- 1 Very limited
- 2 Limited
- 3 Moderate
- 4 Considerable
- 5 Very extensive

## Example

5 1. Reading (books, reports, office notes, job instructions, etc.)

A "5" has been marked in this example. This indicates that "very extensive" reading as a source of job information is desired.

- \_\_\_\_\_ 1. Reading (books, reports, office notes, job instructions, etc.)
- \_\_\_\_\_ 2. Using numerical materials (graphs, accounts, specifications, etc.)
- \_\_\_\_\_ 3. Using graphic materials (pictures, drawings, blueprints, diagrams, maps, tracings, X-ray films, TV pictures, etc.)
- \_\_\_\_\_ 4. Using patterns and related devices (stencils, patterns, templates, etc.)
- \_\_\_\_\_ 5. Using visual displays (dials, gauges, signal lights, radar scopes, speedometers, clocks, etc.)
- \_\_\_\_\_ 6. Using measuring devices (rulers, calipers, tire pressure gauges, scales, thermometers, etc.)
- \_\_\_\_\_ 7. Observing and listening to mechanical devices in use (tools, equipment, machinery, etc.)
- \_\_\_\_\_ 8. Observing things you are working with (materials, parts or objects, such as bread dough being mixed, wood being cut, metal being welded, boxes being inventoried, items being inspected, etc.)
- \_\_\_\_\_ 9. Observing features of nature (landscapes, fields, geological samples, plants, cloud formations, or other features of nature)
- \_\_\_\_\_ 10. Observing or inspecting man-made features of the environment (buildings, dams, highways, bridges, docks, railroads, etc.)
- \_\_\_\_\_ 11. Observing the behavior of people or animals
- \_\_\_\_\_ 12. Observing the events or circumstances around you (flow of traffic, movement of materials, airport control tower operations, etc.)
- \_\_\_\_\_ 13. Viewing art, decorations, etc. (paintings, sculpture, jewelry, window displays, etc.)
- \_\_\_\_\_ 14. Listening to spoken information (instructions, conversations, interviews, meetings, discussions, etc.)
- \_\_\_\_\_ 15. Listening to sounds (non-verbal)
- \_\_\_\_\_ 16. Touching
- \_\_\_\_\_ 17. Smelling
- \_\_\_\_\_ 18. Tasting

## SECTION 2

Rate how important you would like each of the following abilities and activities to be in your work. Again use the numbers 0 to 5.

## Rating Scale

- |   |                    |
|---|--------------------|
| 0 | No importance      |
| 1 | Very minor         |
| 2 | Low                |
| 3 | Average            |
| 4 | High               |
| 5 | Extreme importance |

- \_\_\_\_ 19. Using distance vision (watching things at distances beyond arm's reach)
- \_\_\_\_ 20. Using depth perception (judging the distance from yourself to an object, or the distance between objects, as in running a crane, operating a dentist's drill, etc.)
- \_\_\_\_ 21. Using color perception (telling the difference between things by color)
- \_\_\_\_ 22. Recognizing sound patterns (Morse code, heart beats, engine not running properly, etc.)
- \_\_\_\_ 23. Recognizing sounds by loudness, pitch or tone quality (tuning pianos, repairing sound systems, etc.)
- \_\_\_\_ 24. Body movement sensing (detecting changes in the direction or speed at which you are moving, without using sight or hearing, as in flying aircraft, working in a submarine, etc.)
- \_\_\_\_ 25. Body balancing (walking on steel beams, climbing high poles, working on steep roofs, etc.)
- \_\_\_\_ 26. Judging condition or quality (antique dealer, appraiser, jeweler, used car dealer, coin dealer, etc.)
- \_\_\_\_ 27. Inspecting (grading or finding defects)
- \_\_\_\_ 28. Estimating speed of moving parts (the revolutions per minute of a motor, the speed at which a lathe turns, etc.)
- \_\_\_\_ 29. Estimating speed of moving objects (the speed of vehicles, speed of materials moving on a conveyor belt, etc.)
- \_\_\_\_ 30. Estimating speed of processes (chemical reactions, assembly operations, timing of food preparation, etc.)
- \_\_\_\_ 31. Estimating quantity (number of board feet of lumber in a log, the weight of a horse, the number of bacteria in an area by looking through a microscope, etc.)
- \_\_\_\_ 32. Estimating size (height of a tree, measurements of a box, etc.)
- \_\_\_\_ 33. Estimating time (time to make a delivery, to service a piece of equipment, etc.)
- \_\_\_\_ 34. Combining information (weatherman using different pieces of information to prepare a weather report, pilot using different bits of information to fly his plane, etc.)
- \_\_\_\_ 35. Analyzing information (interpreting financial reports, determining why an automobile engine will not run, diagnosing an illness, etc.)
- \_\_\_\_ 36. Gathering, grouping, or classifying information (preparing reports, filing correspondence, etc.)
- \_\_\_\_ 37. Coding or decoding (reading Morse code, translating foreign languages, shorthand, etc.)
- \_\_\_\_ 38. Setting up or adjusting equipment (setting up a lathe or drill press, adjusting an engine carburetor, etc.)
- \_\_\_\_ 39. Using hands directly to change things (using the hands directly to change or alter or to modify people, materials, products, etc.)

## Rating Scale

- |   |                    |
|---|--------------------|
| 0 | No importance      |
| 1 | Very minor         |
| 2 | Low                |
| 3 | Average            |
| 4 | High               |
| 5 | Extreme importance |

- \_\_\_ 40. Controlling or guiding materials being processed (operating a sewing machine, operating a jig saw, etc.)
- \_\_\_ 41. Assembling or disassembling (putting parts together to form a complete item, or taking an item apart)
- \_\_\_ 42. Arranging or positioning (placing objects, materials, persons, animals, etc., in a specific position or arrangement)
- \_\_\_ 43. Physically handling objects, materials, animals, human beings, etc. (loading or unloading trucks, farming activities, taking care of babies in a nursery, etc.)
- \_\_\_ 44. Highly skilled body coordination activities (athletics, dancing, etc.)
- \_\_\_ 45. Finger manipulation (making careful finger movements in various types of activities, such as in the use of precision tools, repairing watches, playing the piano, etc.)
- \_\_\_ 46. Feeding/off-bearing (feeding materials into a machine or removing materials from a machine or piece of processing equipment)
- \_\_\_ 47. Hand-arm manipulation (activities involving hand and arm movements, as might be used in repairing automobiles, packaging products, etc.)
- \_\_\_ 48. Hand-arm steadiness (steady hand and arm movements, as might be necessary in using a welding torch or in performing surgery, etc.)
- \_\_\_ 49. Eye-hand/foot coordination (the coordination of hand and/or foot movements with what is seen)
- \_\_\_ 50. Limb movement without visual control (movement of body limbs from one position to another without the use of vision)
- \_\_\_ 51. Hand-ear coordination (the coordination of hand movements with sounds or instructions that are heard)
- \_\_\_ 52. Advising (using legal, financial, scientific, technical, clinical, spiritual, or other professional principles to counsel or guide individuals)
- \_\_\_ 53. Negotiating (dealing with others to reach an agreement or solution, for example, labor bargaining, diplomatic relations, etc.)
- \_\_\_ 54. Persuading (influencing others, as in selling or political campaigning)
- \_\_\_ 55. Teaching
- \_\_\_ 56. Interviewing
- \_\_\_ 57. Exchanging routine information (giving and receiving routine information as might be done by a ticket agent, taxi-cab dispatcher, etc.)
- \_\_\_ 58. Exchanging specialized information (giving and receiving specialized information, as might be done in a professional committee meeting, or as engineers might do when discussing a product design, etc.)
- \_\_\_ 59. Public speaking
- \_\_\_ 60. Writing (letters, reports, newspaper articles, etc.)
- \_\_\_ 61. Signaling (hand signals, semaphore, whistles, horns, bells, lights, etc.)
- \_\_\_ 62. Code communications (telegraph, cryptography, shorthand, etc.)
- \_\_\_ 63. Entertaining (performing to amuse or entertain others)

- \_\_\_\_\_ 64. Serving or catering (performing personal services, or attending to the needs of others, for example, waiting on tables, hairdressing, etc.)
- \_\_\_\_\_ 65. Supervising non-employees (students, patients, campers, etc.)
- \_\_\_\_\_ 66. Coordinating activities (social director, committee chairman, etc.)
- \_\_\_\_\_ 67. Serving as a staff member (advising, consulting, and giving other types of assistance to management personnel, for example, legal adviser, accountant, etc.)

#### Rating Scale

- |   |                    |
|---|--------------------|
| 0 | No importance      |
| 1 | Very minor         |
| 2 | Low                |
| 3 | Average            |
| 4 | High               |
| 5 | Extreme importance |

### SECTION 3

Different jobs require you to associate with different types of individuals. How important would you want personal contact with the following types of individuals to be? Continue using the same rating scale.

- \_\_\_\_\_ 68. Executives or officials (government administrators, corporation vice-presidents, plant superintendents, etc.)
- \_\_\_\_\_ 69. Middle management (division or district managers)
- \_\_\_\_\_ 70. Supervisors (foremen, office managers, etc.)
- \_\_\_\_\_ 71. Professional personnel (doctors, lawyers, scientists, engineers, professors, teachers, etc.)
- \_\_\_\_\_ 72. Semi-professional personnel (technicians, draftsmen, designers, photographers, surveyors, etc.)
- \_\_\_\_\_ 73. Personnel engaged in office work (clerks, bookkeepers, receptionists, etc.)
- \_\_\_\_\_ 74. Purchasing agents (individuals who buy for companies)
- \_\_\_\_\_ 75. Customers (as in stores or restaurants)
- \_\_\_\_\_ 76. The public generally (such as police officers, park attendants, etc., might come in contact with)
- \_\_\_\_\_ 77. Students, trainees, or apprentices
- \_\_\_\_\_ 78. Clients, patients, or individuals being counseled
- \_\_\_\_\_ 79. Special interest groups (stockholders, property owners, lobbyists, etc.)
- \_\_\_\_\_ 80. Sales personnel
- \_\_\_\_\_ 81. Skilled and unskilled workers

#### Rating Scale

- |   |                    |
|---|--------------------|
| 0 | No importance      |
| 1 | Very minor         |
| 2 | Low                |
| 3 | Average            |
| 4 | High               |
| 5 | Extreme importance |

## SECTION 4

Following are five job situations or circumstances. Use the numbers from 0 to 5 to indicate how much of each you would be willing to accept in your work.

- | Rating Scale |                 |
|--------------|-----------------|
| 0            | None            |
| 1            | Very little     |
| 2            | Little          |
| 3            | Moderate amount |
| 4            | Considerable    |
| 5            | Large amount    |
- \_\_\_\_\_ 82. Frustrating situations (situations in which you would become frustrated because your attempts to do something might be hindered or obstructed)
- \_\_\_\_\_ 83. Unpleasant personal contacts (some types of police work, handling certain mental patients, etc.)
- \_\_\_\_\_ 84. Personal sacrifice in the service of others (as might be required by a policeman, minister of religion, social worker, etc.)
- \_\_\_\_\_ 85. Disagreements or conflict situations (as might be involved in labor negotiations, enforcement of an unpopular policy, etc.)
- \_\_\_\_\_ 86. Distractions (telephone calls, interruptions and disturbances from others, etc.)

## SECTION 5

Use the numbers from 0 to 5 to indicate how much you would like to use each of the following devices or pieces of equipment in your work.

- | Rating Scale |                |
|--------------|----------------|
| 0            | None           |
| 1            | Very limited   |
| 2            | Limited        |
| 3            | Moderate       |
| 4            | Considerable   |
| 5            | Very extensive |
- \_\_\_\_\_ 87. Precision hand tools (engraver's tools, watchmaker's tools, surgical instruments, etc.)
- \_\_\_\_\_ 88. Other hand tools (hammers, wrenches, knives, scissors, etc.)
- \_\_\_\_\_ 89. Long-handle tools (hoes, rakes, shovels, picks, axes, brooms, etc.)
- \_\_\_\_\_ 90. Handling devices or tools (tongs, ladles, dippers, forceps, etc., used for moving or handling objects and materials)
- \_\_\_\_\_ 91. Hand-held precision power tools (dentist drills, welding equipment, etc.)
- \_\_\_\_\_ 92. Other hand-held power tools (ordinary power saws, drills, sanders, clippers, etc.)
- \_\_\_\_\_ 93. Writing and drawing instruments (pens, pencils, artist's brushes, drafting equipment, etc.)
- \_\_\_\_\_ 94. Applicators (brushes, rags, paint rollers, used in applying solutions, materials, etc.)
- \_\_\_\_\_ 95. Technical devices (cameras, stopwatches, slide rules, etc.)
- \_\_\_\_\_ 96. Processing machines and equipment (used to process or modify parts, objects, materials, etc.)
- \_\_\_\_\_ 97. Controls: used continuously (controls requiring continuous adjustment or manipulation, for example, accelerator, steering wheel, etc.)
- \_\_\_\_\_ 98. Controls: not used continuously (controls used to start or stop, to set positions on a machine, etc.)

- \_\_\_\_\_ 99. Keyboard devices (pianos, typewriters, adding machines, etc.)
- \_\_\_\_\_ 100. Highway or rail vehicles (automobiles, trucks, buses, trains, etc.)
- \_\_\_\_\_ 101. Powered mobile equipment (fork lifts, self-propelled lawn mowers, road graders, tractors, etc.)
- \_\_\_\_\_ 102. Powered water vehicles (ships, submarines, motor boats, etc.)
- \_\_\_\_\_ 103. Air or space vehicles (planes, helicopters, balloons, gliders, rocket-ships, etc.)
- \_\_\_\_\_ 104. Man-moved mobile equipment (hand-pushed lawn mowers, wheel barrows, floor polishers, etc.)
- \_\_\_\_\_ 105. Operating equipment (cranes, hoists, elevators, etc.)
- \_\_\_\_\_ 106. Remote-controlled equipment (conveyor systems, etc.)

#### Rating Scale

- 0 None  
1 Very limited  
2 Limited  
3 Moderate  
4 Considerable  
5 Very extensive

### SECTION 6

Use the numbers from 0 to 5 to indicate how much of your working time you would be willing to spend in the following activities or under the following circumstances.

- \_\_\_\_\_ 107. Sitting
- \_\_\_\_\_ 108. Standing
- \_\_\_\_\_ 109. Walking or running
- \_\_\_\_\_ 110. Climbing (for example, house painter, telephone lineman, etc.)
- \_\_\_\_\_ 111. Kneeling or stooping (or other body positions which may be uncomfortable or awkward)
- \_\_\_\_\_ 112. Working indoors in high temperatures (conditions in which you may be uncomfortable, such as in boiler rooms, around furnaces, etc.)
- \_\_\_\_\_ 113. Working indoors in low temperatures (conditions in which you would be definitely cold even though you wore heavy clothing, such as in refrigerated rooms, etc.)
- \_\_\_\_\_ 114. Working outdoors (under different weather conditions)
- \_\_\_\_\_ 115. Working in contaminated air (dust, fumes, smoke, bad odors, etc.)
- \_\_\_\_\_ 116. Working with vibrating equipment (equipment that vibrates the whole body or body limbs (driving a tractor or truck, operating an air hammer, etc.)
- \_\_\_\_\_ 117. Working under poor lighting conditions (not enough light, excessive glare, etc.)

#### Rating Scale

- 0 None  
1 Under 1/10 of the time  
2 Between 1/10 and 1/3 of the time  
3 Between 1/3 and 2/3 of the time  
4 Over 2/3 of the time  
5 Almost continually

Rating Scale

- 0 None
- 1 Under 1/10 of the time
- 2 Between 1/10 and 1/3 of the time
- 3 Between 1/3 and 2/3 of the time
- 4 Over 2/3 of the time
- 5 Almost continually

- 118. Working under dirty conditions (garages, foundries, coal mines, highway construction, furnace cleaning, etc.)
- 119. Working in awkward or small work spaces (conditions in which the body is cramped or uncomfortable)
- 120. Traveling

## SECTION 7

Below are descriptions of 4 degrees of injury, ranging from minor to very serious. Use the numbers from 0 to 5 to indicate the "risk" (or the possibility) of each occurring that you would be willing to accept as a part of your work.

Rating Scale

- 0 No possibility
- 1 Very limited possibility
- 2 Limited possibility
- 3 Moderate possibility
- 4 Fairly high possibility
- 5 High possibility

- 121. Minor injury or illness which might result in a day or less of lost time
- 122. Injury or illness which would prevent work for one full day or more, but which would not have any permanent effects
- 123. Permanent injury or illness (resulting in the loss of an arm, leg, hearing, sight of one eye, etc.)
- 124. Permanent total disability or death (injury or illness which would result in disability for life, or in death)

## SECTION 8

Following is a list of job requirements. Use the numbers from 0 to 5 to rate how much you would want each to be a part of your work.

Rating Scale

- 0 None (No part)
- 1 Very limited
- 2 Limited
- 3 Moderate
- 4 Considerable
- 5 Very extensive

- 125. A set specified rate of work (assembly line, etc.)
- 126. Repetitive activities (repeating the same activity, without interruption, for periods of time)
- 127. Cycled work activities (working according to a schedule which repeats weekly, daily, or hourly, such as a postman or milkman making his rounds, a guard patrolling his beat, etc.)
- 128. Precision (need to be more than normally precise and accurate)
- 129. Attention to detail
- 130. Recognition (need to identify certain objects, events, processes, behavior, etc.)

Rating Scale

- 0 None (No part)
- 1 Very limited
- 2 Limited
- 3 Moderate
- 4 Considerable
- 5 Very, extensive

- \_\_\_\_ 131. Vigilance (need to be constantly alert and aware of any changes in a situation)
- \_\_\_\_ 132. Need to keep job knowledge current (continually learning new developments related to the job)

## SECTION 9

Select one of the responses for each of the following questions.

- \_\_\_\_ 133. Competition: How important would you want competition with other individuals or groups to be in your work (for such things as promotions, financial rewards, recognition, etc.)
- 1. Very minor importance
  - 2. Minor importance
  - 3. Moderate importance
  - 4. High importance
  - 5. Extreme importance
- \_\_\_\_ 134. Decision making level: What level of decisions would you want to make in your work?
- 1. Low level decisions (such as must be made in pasting labels on cartons, putting items on shelves in a warehouse, etc.)
  - 2. Below average level decisions (such as those made in running a wood planer, greasing a car, or dispatching a taxi)
  - 3. Average level decisions (such as in ordering office supplies several months in advance, determining what is wrong with an automobile engine, setting up machine tools for operation, etc.)
  - 4. Above average level decisions (such as deciding who will be promoted, who will be hired or fired, if property will be purchased, etc.)
  - 5. High level decisions (such as recommending major surgery, selecting the location for a new plant, or approving a corporation's annual budget)
- \_\_\_\_ 135. Reasoning in problem solving: Which of the following reasoning levels would you want your work to require?
- 1. Low (use of common sense to carry out uninvolved instructions, as might be done by a janitor or a deliveryman)
  - 2. Below average (use of some experience or training, such as a sales clerk, a postman, a keypunch operator or an electrician's apprentice might use)
  - 3. Average (use of principles to solve practical problems, such as might be required in farming, drafting or carpentry)
  - 4. Above average (use of logic or scientific thinking, as might be used by a mechanical engineer, a personnel director, or the manager of a store, etc.)
  - 5. High (use of principles of logic or scientific thinking to solve a wide range of problems, as might be done by a research chemist, a nuclear engineer, a corporate president, or the manager of a large plant)

136. Amount of planning: How much planning or scheduling would you like to do in your work?

0. None
1. Very little (little planning of your own activities, as in selling tickets at a theater, working on an assembly line, etc.)
2. Little (some planning required, but not a great deal, as in delivering milk, working as a janitor, etc.)
3. Average amount (for example, a carpenter who must plan the best way to build a house, the planning that must be done by a taxi dispatcher, etc.)
4. Considerable (for example, a foreman who must plan what his workers must do, a teacher who must prepare lectures or lesson plans, etc.)
5. Large amount (for example, a department store manager, an executive who must plan the activities of different work groups, an architect, etc.)

137. Education: How much education would you want your work to require?

0. Little or none
1. Less than high school
2. High school diploma
3. Some college education
4. College degree
5. Advanced degree (M.S., Ph.D., M.D., L.L.D., etc.)

138. Training: How much training, other than the education in number 137, would you want your work to require? Consider such things as on-the-job training, apprentice training, technical and vocational schools, and orientation training.

0. 1 day or less
1. Over 1 day up to 1 month
2. Between 1 and 6 months
3. Between 6 months and 1 year
4. Between 1 and 3 years
5. Over 3 years

139. Experience: How much experience in related or lower-level jobs would you like your work to require?

1. Less than 1 month
2. Less than 1 year
3. Between 1 and 3 years
4. Between 3 and 5 years
5. Over 5 years

140. Level of mathematics: What is the highest level of mathematics you would want your job to require?

0. None
1. Simple counting, addition and subtraction of numbers smaller than 100
2. Addition and subtraction of numbers up to 1,000, and some multiplication and division
3. Use of fractions, decimals, percentages
4. Use of algebra, geometry, trigonometry, or statistics
5. Advanced use of calculus, topology, vector analysis, factor analysis, probability theory, etc.

141. Physical exertion: How much physical effort would you want your work to require?

1. Very light (occasional walking or standing, occasionally moving light objects, as might be required of a secretary, watchmaker, telephone operator, etc.)
2. Light (frequently walking or standing and often exerting effort equal to that which would be required to lift between 10 and 20 pounds, as might be done by a sales clerk, bank teller, etc.)
3. Moderate (frequently exerting effort equal to that which would be required to lift between 25 and 50 pounds, for example, auto mechanic, coin vending machine serviceman, bus driver, etc.)
4. Heavy (lifting between 50 and 100 pounds, for example, general laborer, bulldozer operator, baggage porter, etc.)
5. Very heavy (frequently using enough effort to lift 50 pounds, and occasionally using enough effort to lift over 100 pounds, for example, quarry mining, setting up concrete forms, etc.)

142. Supervision given: How many workers would you want to directly supervise?

0. None
1. 1 or 2 workers
2. 3 to 5 workers
3. 6 to 8 workers
4. 9 to 12 workers
5. 13 or more workers

143. Personnel responsibility: How many personnel would you want to be responsible for in your work? As an example, a president of a corporation would be responsible for everyone who worked for the corporation.

0. None
1. 10 or fewer workers
2. 11 to 50 workers
3. 51 to 250 workers
4. 251 to 750 workers
5. 751 or more workers

144. Safety responsibility: How much responsibility for the safety of others would you be willing to assume in your work?

0. None
1. Little (working only with small hand tools, machines that are not dangerous, etc.)
2. Limited (responsible to exercise only reasonable care)
3. Intermediate (must be careful to avoid hurting others, as in operating overhead cranes, driving vehicles, etc.)
4. Substantial (must constantly be careful not to injure others, as in handling dangerous chemicals or explosives, etc.)
5. Very substantial (the safety of others would depend entirely upon you, as in piloting the aircraft, performing major surgery, etc.)

145. Property responsibility: How much property would you be willing to assume responsibility for?

1. Very little (a few dollars worth)
2. Little (\$50.00 to \$500.00 worth)
3. Moderate amount (\$501.00 to \$5,000.00 worth)
4. Substantial amount (\$5,001.00 to \$25,000.00 worth)
5. Very substantial amount (more than \$25,000.00 worth)

146. General responsibility: How much general responsibility would you want in your work?

1. Very little
2. Little
3. Average amount
4. Substantial
5. Very substantial

147. Supervision received: How much supervision would you want to receive in your work?

1. Close supervision, including job assignments and close observation of work
2. General supervision
3. General guidance, but quite independent of others
4. Very little direction or guidance
5. No supervision

148. Job structure: To what extent would you want to follow a routine, or have your work outlined for you?

1. Almost no change from a predetermined job routine (working on an assembly line, etc.)
2. Little change from the work routine possible (bookkeeping, stocking items in a warehouse, etc.)
3. Certain work must be done, but you can determine your own schedule or routine (carpenter, automobile mechanic, machinist, etc.)
4. Little routine work (most of the decisions made by you, for example, store manager, industrial engineer, etc.)
5. No routine (a wide variety of problems must be dealt with, and you would determine your own solutions, for example, corporation vice-president, research chemist, etc.)

149. Criticality of position: Some positions in a company are especially critical. If not filled properly, such things as the company's earnings or reputation might seriously suffer. With this in mind, what degree of criticality would you want your job or position to have?

1. Very low
2. Low
3. Moderate
4. High
5. Very high

150. Civic obligations: How important would you want civic obligations to be in your work (serving on zoning boards, helping with United Fund drives, assisting with school activities, etc.)

0. No importance
1. Very minor
2. Low
3. Average
4. High
5. Extreme importance

## APPENDIX B

Job Behavior Experience Questionnaire (JBEQ)

## Job Behavior Experience Questionnaire (JBEQ)

DO NOT WRITE ON THIS QUESTIONNAIRE. PLEASE USE THE ANSWER SHEET PROVIDED.

Section I:

Information is needed to perform any type of work, and that information can come from many different sources. GET THE INFORMATION NEEDED TO DO A JOB. On the answer sheet, use the rating scale below to indicate HOW MUCH EXPERIENCE YOU HAVE HAD IN USING OR ENGAGING IN THE FOLLOWING ACTIVITIES TO OBTAIN INFORMATION NECESSARY TO DO A JOB.

Rating Scale:

- 0 = none
  - 1 = very limited
  - 2 = limited
  - 3 = moderate
  - 4 = considerable
  - 5 = very extensive
- 

1. Reading (books, reports, office notes, job instructions)
2. Using numerical materials (graphs, accounts, specifications)
3. Using graphic materials (pictures, drawings, blueprints, diagrams)
4. Using patterns and related materials (stencils, patterns, templates)
5. Using visual displays (dials, gauges, signal lights, radar scopes)
6. Using measuring devices (rulers, calipers, tire pressure gauges, scales)
7. Observing and listening to mechanical devices in use (tools, equipments, machinery)
8. Observing things you are working with (materials, parts, or objects such as bread dough being mixed, wood being cut, metal being welded, boxes being inventoried, items being inspected)
9. Observing features of nature (landscapes, fields, geological formations, plants, cloud formations)
10. Observing or inspecting man-made features of the environment (buildings, dams, highways, bridges, docks, railroads)
11. Observing the behavior of people or animals
12. Observing the events or circumstances around you (flow of traffic, movement of materials, airport control tower operations)
13. Viewing art, decorations, etc. (paintings, sculpture, jewelry, window displays)
14. Listening to spoken information (instructions, conversations, interviews)
15. Listening to sounds (non-verbal)
16. Touching

Rating Scale:

- 0 = none  
1 = very limited  
2 = limited  
3 = moderate  
4 = considerable  
5 = very extensive
- 

On the answer sheet, use the rating scale given below to indicate HOW MUCH EXPERIENCE YOU HAVE HAD IN DOING THE FOLLOWING ACTIVITIES OR USING THE FOLLOWING ABILITIES.

17. Smelling
18. Tasting
19. Using distance vision (watching things at distances beyond arm's reach)
20. Using depth perception (judging the distance from yourself to an object, or the distance between objects, as in running a crane)
21. Using color perception (telling the difference between things by color)
22. Recognizing sound patterns (morse code, heart beats, engine not running properly)
23. Recognizing sounds by loudness, pitch or tone quality (tuning pianos, repairing sound systems)
24. Body movement sensing (detecting changes in the direction or speed at which you are moving, without using sight or hearing, as in flying an aircraft, or working in a submarine)
25. Body balancing (walking on steel beams, climbing high poles, working on roofs)
26. Judging condition or quality (antique dealer, appraiser, jeweler, used car salesperson, coin dealer)
27. Inspecting (grading or finding defects)
28. Estimating the speed of moving parts (the revolutions per minute of a motor, the speed at which a lathe is running, the speed at which a phonograph record is turning)
29. Estimating speed of moving objects (the speed of vehicles, speed of materials moving on a conveyor belt)
30. Estimating speed of processes (chemical reactions, assembly operations, timing of food preparation)
31. Estimating quantity (number of board feet of lumber in a log, the weight of a horse, the number of bacteria in an area by looking through a microscope)
32. Estimating size (height of a tree, measurements of a box)
33. Estimating time (time to make a delivery, to service a piece of equipment)

Rating Scale:

- 0 = none
  - 1 = very limited
  - 2 = limited
  - 3 = moderate
  - 4 = considerable
  - 5 = very extensive
- 

- 34. Combining information (weatherman using different pieces of information to prepare a weather report, pilot using different pieces of information to fly a plane)
- 35. Analyzing information (interpreting financial reports, determining why an automobile engine will not run, diagnosing an illness)
- 36. Gathering, grouping, or classifying information (preparing reports, filing correspondence)
- 37. Coding or decoding (translating foreign language, shorthand)
- 38. Setting up or adjusting equipment (setting up a lathe or drill press, adjusting an engine carburetor)
- 39. Using hands directly to change things (using the hands to change or alter or to modify people, materials, products)
- 40. Controlling or guiding materials being processed (operating a sewing machine, operating a jig saw)
- 41. Assembling or disassembling (putting parts together to form a complete items, or taking an item apart)
- 42. Arranging or positioning (placing objects, materials, persons, animals in a specific position, e.g. positioning a model for a photograph)
- 43. Physically handling objects, materials, animals, persons (loading or unloading trucks, farming activities, taking care of babies)
- 44. Highly skilled body coordination (athletics, dancing)
- 45. Finger manipulation (making careful finger movements in various types of activities, such as in the use of precision tools, repairing watches)
- 46. Feeding/off-bearing (feeding materials into a machine or removing materials from a machine)
- 47. Hand-arm manipulation (activities involving hand and arm movements, e.g. movements that might be used in repairing an automobile or packaging products)
- 48. Hand-arm steadiness (steady hand and arm movements such as might be used in working with a welding torch)

Rating Scale:

- 0 = none
  - 1 = very limited
  - 2 = limited
  - 3 = moderate
  - 4 = considerable
  - 5 = very extensive
- 

- 49. Eye-hand/foot coordination (the coordination of hand and/or foot movements with what is seen, e.g. turning the steering wheel and putting on the brake to stop a car at a stop light)
- 50. Limb movement without visual control (movement of body limbs from one position to another without the use of vision, e.g. the center on football team must give the ball to the quarterback while looking straight ahead)
- 51. Hand-ear coordination (the coordination of hand movements with sounds or instructions that are heard, e.g. centering a football on sound commands from the quarterback)
- 52. Advising (using legal, financial, scientific, technical, clinical, spiritual or other professional principles to counsel or guide people)
- 53. Negotiating (dealing with others to reach an agreement or solution)
- 54. Persuading (influencing others as in political campaigns)
- 55. Teaching
- 56. Interviewing
- 57. Exchanging routine information (giving or exchanging routine information as might be done by a ticket agent, taxi-cab dispatcher)
- 58. Exchanging specialized information (giving or receiving specialized information as might be done at a professional committee meeting, or as engineers might do when discussing a product design)
- 59. Public speaking
- 60. Writing (letters, reports, newspaper articles)
- 61. Signaling (hand signals, semaphore, whistles, horns, bells, lights)
- 62. Code communications (telegraph, cryptography, shorthand)
- 63. Entertaining (performing to amuse or entertain)
- 64. Serving or catering (performing personal services or attending to the needs of others, e.g. waiting on tables, hairdressing)
- 65. Supervising non-employees (campers, patients, students)

Rating Scale:

- 0 = none
- 1 = very limited
- 2 = limited
- 3 = moderate
- 4 = considerable
- 5 = very extensive

Section III:

Different jobs require you to associate with different types of individuals as part of your job. On the answer sheet, using the scale given below, indicate HOW MUCH EXPERIENCE YOU HAVE HAD IN INTERACTING WITH THE TYPES OF PEOPLE LISTED BELOW.

- 
- 66. Coordinating activities (social director, committee chairperson)
  - 67. Serving as a staff member (advising, consulting, and giving other types of assistance to management personnel, e.g. legal advisor, accountant)
  - 68. Executives or officials (government administrators, corporation vice-presidents, plant superintendents)
  - 69. Middle management (division or district managers)
  - 70. Supervisors (foremen, office managers)
  - 71. Professional personnel (doctors, lawyers, scientists, engineers, professors, teachers)
  - 72. Semi-professional personnel (technicians, draftmen, designers, photographers, surveyors)
  - 73. Personnel engaged in office work (clerks, bookkeepers, receptionists)
  - 74. Purchasing agents (individuals who buy for companies)
  - 75. Customers (as in stores or restaurants)
  - 76. The general public (such as police officers or park attendants might come into contact with)
  - 77. Students, trainees, or apprentices
  - 78. Clients, patients, or people being counseled
  - 79. Special interest groups (stockholders, property owners, lobbyists)
  - 80. Sales personnel
  - 81. Skilled or unskilled workers (carpenters, bricklayers, laborers)

Section IV:

Following are five job situations or circumstances. On the answer sheet, use the scale below to indicate HOW MUCH EXPERIENCE YOU HAVE HAD IN WORKING IN THE FIVE TYPES OF SITUATIONS.

Rating Scale:

- 0 = none
  - 1 = very limited
  - 2 = limited
  - 3 = moderate
  - 4 = considerable
  - 5 = very extensive
- 

- 82. Frustrating situation (situations in which you would become frustrated because your attempts to do something would be blocked)
- 83. Unpleasant personal contacts (for example, some types of police work, handling mental patients)
- 84. Personal sacrifice in the service of others (as might be required by a police officer, minister of a religion, social worker)
- 85. Disagreements or conflict situations (as might be involved in labor negotiations or the enforcement of an unpopular policy)
- 86. Distractions (telephone calls, interruptions and disturbances from others)

Section V:

Use the same scale as for Section IV. On the answer sheet indicate HOW MUCH EXPERIENCE YOU HAVE HAD IN USING EACH OF THE FOLLOWING DEVICES OR PIECES OF EQUIPMENT.

-----

- 87. Precision hand tools (engravers' tools, watchmaker's tools, surgical tools)
- 88. Other hand tools (hammers, wrenches, knives, scissors)
- 89. Long handled tools (hoes, rakes, shovels, picks, axes, brooms)
- 90. Handling devices or tools (tongs, ladles, dippers, forceps used for moving or handling objects and materials)
- 91. Hand held precision power tools (dentist drill, welding equipment)
- 92. Other hand-held power tools (ordinary power saws, drills, sanders, clippers)
- 93. Writing and drawing instruments (pens, pencils, artist's brushes)
- 94. Applicators (brushes, rags, paint rollers used in applying materials)
- 95. Technical devices (cameras, stopwatches, slide rules)
- 96. Professing machines and equipment (used to process or modify parts, objects, materials)
- 97. Controls: used continuously (controls requiring continual adjustment or manipulation, for example the accelerator or steering wheel of a car)
- 98. Controls: not used continuously (controls used to start or stop, to set positions on a machine, e.g. the volume knob on a t.v.)

99. Keyboard devices (pianos, typewriters, adding machines)
100. Highway or rail vehicles (automobiles, trucks, buses, trains)
101. Powered mobile equipment (fork lifts, self-propelled lawn mowers)
102. Powered water vehicles (ships, motor boats)
103. Air or space vehicles (planes, helicopters, ballons, gliders)
104. Man-moved mobile equipment (hand-pushed lawn mowers, wheel barrows, floor polishers, vacuum cleaners)
105. Operating equipment (cranes, hoists, elevators)
106. Remote controlled equipment (conveyor systems, etc.)

Section VI:

Using the scale given below, indicate HOW MUCH EXPERIENCE YOU HAVE HAD IN JOBS WHICH REQUIRED LARGE AMOUNTS OF THE FOLLOWING ACTIVITIES OR INVOLVED TO A LARGE EXTENT THE FOLLOWING SITUATIONS.

Rating Scale:

- 0 = none
- 1 = very limited
- 2 = limited
- 3 = moderate
- 4 = considerable
- 5 = very extensive

- 
107. Sitting
  108. Standing
  109. Walking or running
  110. Climbing (e.g. house painter, telephone lineman)
  111. Kneeling or stooping (or other body positions that may be uncomfortable or awkward)
  112. Working indoors in high temperatures (such as in boiler rooms, or around furnaces)
  113. Working indoors in low temperatures (conditions in which you would be definitely cold even though you wore warm clothing, such as in refrigerated rooms)
  114. Working outdoors (under different weather conditions)
  115. Working in contaminated air (dust, fumes, bad odors)
  116. Working with vibrating equipment (equipment that vibrates the whole body or limbs, e.g. operating a jack hammer)
  117. Working under poor lighting conditions (not enough light, excessive glare)
  118. Working under dirty conditions (garages, foundries, coal mines)

119. Working in awkward or small spaces (conditions in which the body is cramped or uncomfortable, e.g. working under houses in small crawl spaces)

120. Traveling

Section VII:

Below are descriptions of 4 degrees of injury that might occur on a job. These injuries range from minor to very serious.

Using the scale given below, on the answer sheet, indicate HOW MUCH EXPERIENCE YOU HAVE HAD WORKING IN SITUATIONS WHERE EACH TYPE OF INJURY IS VERY LIKELY.

Rating Scale:

0 = none

1 = very limited

2 = limited

3 = moderate

4 = considerable

5 = very extensive

-----  
121. Minor injury or illness which might result in a day or less of lost time

122. Injury or illness which would prevent me from working more than one day, but which would not have any permanent effects.

123. Permanent injury or illness resulting in the loss of an arm, leg, hearing, sight in one eye, etc.

124. Permanent total disability or death

Section VIII:

Use the same scale as Section VII. On the answer sheet, indicate HOW MUCH EXPERIENCE YOU HAVE HAD WORKING IN JOBS WITH THESE TYPE OF CHARACTERISTICS.

-----  
125. A set specified rate of work (e.g. an auto assembly line)

126. Repetitive activities (repeating the same activity for long periods of time)

127. Cycled work activities (working according to a schedule that repeats weekly, daily or hourly, e.g. a postman or milkman making rounds, a guard patrolling a particular beat)

128. Precision (need to be more than normally precise and accurate)

129. Attention to detail

130. Recognition (need to identify certain objects, events, processes, behavior, e.g. a football referee looking for penalties)

131. Vigilance (need to be constantly alert and aware of changes)

132. Need to keep job knowledge current

Section IX:

Using the answer sheet, respond to each of the items using the rating scale provided.

-----

133. How much experience have you had working in jobs that were very competitive in nature? (0) none, (1) very limited, (2) limited, (3) moderate, (4) considerable, or (5) very extensive

134. Using the following scale, indicate the degree of experience you have had in making each of the following types of decisions.

Rating scale: 0 = none      1 = very limited      2 = limited  
3 = moderate      4 = considerable      5 = very extensive

1. low level decisions
2. below average level decisions
3. average level decisions
4. above average level decisions
5. high level decisions

135. Using the following scale, indicate the degree of experience you have had doing activities requiring each of the following reasoning/problem solving levels.

Rating scale: 0 = none      1 = very limited      2 = limited  
3 = moderate      4 = considerable      5 = very extensive

1. low level reasoning/problem solving
2. below average reasoning/problem solving
3. average reasoning/problem solving
4. above average reasoning/problem solving
5. high level of reasoning/problem solving

136. How much experience have you had in doing activities which required the following amounts of planning/scheduling.

Rating scale:    0 = none            1 = very limited            2 = limited  
                  3 = moderate        4 = considerable        5 = very extensive

- (0) no planning
- (1) very little planning
- (2) little planning
- (3) average amount of planning
- (4) considerable planning
- (5) large amount of planning

137. How much education do you have?

- 0 = none
- 1 = less than a high school degree
- 2 = high school diploma
- 3 = some college education
- 4 = college degree
- 5 = advanced graduate degree

138. What is the highest level of mathematics you would consider yourself "good at?"

- 0 = none
- 1 = simple counting, addition and subtraction of numbers less than 100
- 2 = addition and subtraction of numbers up to 1000, and some multiplication and division
- 3 = use of fractions, decimals, percentages
- 4 = use of algebra, geometry, trigonometry, or statistics
- 5 = advanced use of calculus, topology, vector analysis, factor analysis, probability theory

139. What level of physical effort do you feel you could reasonably be able to exert on a job?

- (1) very light
- (2) light
- (3) moderate
- (4) heavy
- (5) very heavy

140. How many workers have you supervised previously?
- 0 = none
  - 1 = 1 or 2
  - 2 = 3 to 5
  - 3 = 6 to 8
  - 4 = 9 to 12
  - 5 = 13 or more
141. How many workers have you previously been responsible for even though you may not have directly supervised them?
- 0 = none
  - 1 = 10 or fewer
  - 2 = 11 to 50
  - 3 = 51 to 250
  - 4 = 251 to 750
  - 5 = more than 750
142. What is the highest level of responsibility for others that you have assumed previously?
- 0 = none
  - 1 = little
  - 2 = limited
  - 3 = intermediate
  - 4 = substantial
  - 5 = very substantial
143. What is the highest value of property you have previously been responsible for?
- 1 = very little
  - 2 = little
  - 3 = moderate amount
  - 4 = substantial amount
  - 5 = very substantial amount
144. How much general responsibility have you previously assumed in a job?
- 1 = very little
  - 2 = little
  - 3 = moderate amount
  - 4 = substantial
  - 5 = very substantial

145. Generally, how much supervision have you received in past jobs?
- 0 = no supervision
  - 1 = very little direction or guidance
  - 2 = general guidance but quite independent from others
  - 3 = general supervision
  - 4 = close supervision including job assignments and close observation of work
146. In the past, to what extent have you followed a routine work schedule set for you by someone else?
- 1 = almost no change from routine work
  - 2 = little change from routine work
  - 3 = certain work had to be done, but I determined by own schedule
  - 4 = little routine work done
  - 5 = no routine work
147. Generally, what degree of criticality has been associated with the positions you have held in the past?
- 1 = very low      2 = low      3 = moderate      4 = high      5 = very high
148. To what extent have you had experience in working with civic organizations in the past?
- 0 = none      1 = very limited      2 = limited      3 = moderate      4 = considerable  
5 = very extensive

APPENDIX C  
Combined JAPQ/JBEQ Questionnaire

## Combined JAPQ/JBEQ Instrument

DO NOT WRITE ON THIS QUESTIONNAIRE. PLEASE USE THE ANSWER SHEET PROVIDED.

Section I:

Information is needed to perform any type of work, and that information can come from many different sources. In COLUMN A on the answer sheet, use the numbers from 0 to 5 on the rating scale given below, to indicate HOW MUCH YOU WOULD LIKE TO USE OR ENGAGE IN THE FOLLOWING ACTIVITIES TO GET THE INFORMATION NEEDED TO DO A JOB. In COLUMN B on the answer sheet, use the same rating scale to indicate HOW MUCH EXPERIENCE YOU HAVE HAD IN USING OR ENGAGING IN THE FOLLOWING ACTIVITIES TO OBTAIN INFORMATION NECESSARY TO DO A JOB.

Rating Scale:

- 0 = none
  - 1 = very limited
  - 2 = limited
  - 3 = moderate
  - 4 = considerable
  - 5 = very extensive
- 

1. Reading (books, reports, office notes, job instructions)
2. Using numerical materials (graphs, accounts, specifications)
3. Using graphic materials (pictures, drawings, blueprints, diagrams)
4. Using patterns and related materials (stencils, patterns, templates)
5. Using visual displays (dials, gauges, signal lights, radar scopes)
6. Using measuring devices (rulers, calipers, tire pressure gauges, scales)
7. Observing and listening to mechanical devices in use (tools, equipments, machinery)
8. Observing things you are working with (materials, parts, or objects such as bread dough being mixed, wood being cut, metal being welded, boxes being inventoried, items being inspected)
9. Observing features of nature (landscapes, fields, geological formations, plants, cloud formations)
10. Observing or inspecting man-made features of the environment (buildings, dams, highways, bridges, docks, railroads)
11. Observing the behavior of people or animals
12. Observing the events or circumstances around you (flow of traffic, movement of materials, airport control tower operations)
13. Viewing art, decorations, etc. (paintings, sculpture, jewelry, window displays)
14. Listening to spoken information (instructions, conversations, interviews)
15. Listening to sounds (non-verbal)
16. Touching
17. Smelling
18. Tasting

Section II:

In COLUMN A of the answer sheet, use the rating scale given below to indicate HOW IMPORTANT YOU WOULD LIKE EACH OF THE FOLLOWING ABILITIES AND ACTIVITIES TO BE ON A JOB.

Rating Scale for Column A:

- 0 = no importance
- 1 = very minor importance
- 2 = low importance
- 3 = average importance
- 4 = high importance
- 5 = extreme importance

In COLUMN B of the answer sheet, use the rating scale given below to indicate HOW MUCH EXPERIENCE YOU HAVE HAD IN DOING THE FOLLOWING ACTIVITIES OR USING THE FOLLOWING ABILITIES.

Rating Scale for Column B:

- 0 = none
  - 1 = very limited
  - 2 = limited
  - 3 = moderate
  - 4 = considerable
  - 5 = very extensive
- 

- 19. Using distance vision (watching things at distances beyond arm's reach)
- 20. Using depth perception (judging the distance from yourself to an object, or the distance between objects, as in running a crane)
- 21. Using color perception (telling the difference between things by color)
- 22. Recognizing sound patterns (Morse code, heart beats, engine not running properly)
- 23. Recognizing sounds by loudness, pitch or tone quality (tuning pianos, repairing sound systems)
- 24. Body movement sensing (detecting changes in the direction or speed at which you are moving, without using sight or hearing, as in flying an aircraft, or working in a submarine)
- 25. Body balancing (walking on steel beams, climbing high poles, working on roofs)
- 26. Judging condition or quality (antique dealer, appraiser, jeweler, used car salesperson, coin dealer)
- 27. Inspecting (grading or finding defects)
- 28. Estimating the speed of moving parts (the revolutions per minute of a motor, the speed at which a lathe is running, the speed at which a phonograph record is turning)
- 29. Estimating speed of moving objects (the speed of vehicles, speed of materials moving on a conveyor belt)
- 30. Estimating speed of processes (chemical reactions, assembly operations, timing of food preparation)
- 31. Estimating quantity (number of board feet of lumber in a log, the weight of a horse, the number of bacteria in an area by looking through a microscope)

Rating Scale for Column A:

- 0 = no importance
- 1 = very minor importance
- 2 = low importance
- 3 = average importance
- 4 = high importance
- 5 = extreme importance

Rating Scale for Column B:

- 0 = none
- 1 = very limited
- 2 = limited
- 3 = moderate
- 4 = considerable
- 5 = very extensive

- 
- 32. Estimating size (height of a tree, measurements of a box)
  - 33. Estimating time (time to make a delivery, to service a piece of equipment)
  - 34. Combining information (weatherman using different pieces of information to prepare a weather report, pilot using different pieces of information to fly a plane)
  - 35. Analyzing information (interpreting financial reports, determining why an automobile engine will not run, diagnosing an illness)
  - 36. Gathering, grouping, or classifying information (preparing reports, filing correspondence)
  - 37. Coding or decoding (translating foreign languages, shorthand)
  - 38. Setting up or adjusting equipment (setting up a lathe or drill press, adjusting an engine carburator)
  - 39. Using hands directly to change things (using the hands to change or alter or to modify people, materials, products)
  - 40. Controlling or guiding materials being processed (operating a sewing machine, operating a jig saw)
  - 41. Assembling or disassembling (putting parts together to form a complete items, or taking an item apart)
  - 42. Arranging or positioning (placing objects, materials, persons, animals in a specific position, e.g. positioning a model for a photograph)
  - 43. Physically handling objects, materials, animals, persons (loading or unloading trucks, farming activities, taking care of babies)
  - 44. Highly skilled body coordination (athletics, dancing)
  - 45. Finger manipulation (making careful finger movements in various types of activities, such as in the use of precision tools, repairing watches)
  - 46. Feeding/off-bearing (feeding materials into a machine or removing materials from a machine)
  - 47. Hand-arm manipulation (activities involving hand and arm movements, e.g. movements that might be used in repairing an automobile or packaging products)
  - 48. Hand-arm steadiness (steady hand and arm movements such as might be used in working with a welding torch)
  - 49. Eye-hand/foot coordination (the coordination of hand and/or foot movements with what is seen, e.g. turning the steering wheel and putting on the brake to stop a car at a stop light)
  - 50. Limb movement without visual control (movement of body limbs from one position to another without the use of vision, e.g. the center on a football team must give the ball to the quarterback while looking straight ahead)

Rating Scale for Column A:

- 0 = no importance
- 1 = very minor importance
- 2 = low importance
- 3 = average importance
- 4 = high importance
- 5 = extreme importance

Rating Scale for Column B:

- 0 = none
- 1 = very limited
- 2 = limited
- 3 = moderate
- 4 = considerable
- 5 = very extensive

- 51. Hand-ear coordination (the coordination of hand movements with sounds or instructions that are heard, e.g. centering a football on sound commands from the quarterback)
- 52. Advising (using legal, financial, scientific, technical, clinical, spiritual or other professional principles to counsel or guide people)
- 53. Negotiating (dealing with others to reach an agreement or solution)
- 54. Persuading (influencing others as in political campaigns)
- 55. Teaching
- 56. Interviewing
- 57. Exchanging routine information (giving or exchanging routine information as might be done by a ticket agent, taxi-cab dispatcher)
- 58. Exchanging specialized information (giving or receiving specialized information as might be done at a professional committee meeting, or as engineers might do when discussing a product design)
- 59. Public speaking
- 60. Writing (letters, reports, newspaper articles)
- 61. Signaling (hand signals, semaphore, whistles, horns, bells, lights)
- 62. Code communications (telegraph, cryptography, shorthand)
- 63. Entertaining (performing to amuse or entertain)
- 64. Serving or catering (performing personal services or attending to the needs of others, e.g. waiting on tables, hairdressing)
- 65. Supervising non-employees (campers, patients, students)
- 66. Coordinating activities (social director, committee chairperson)
- 67. Serving as a staff member (advising, consulting, and giving other types of assistance to management personnel, e.g. legal advisor, accountant)

Section III:

Different jobs require you to associate with different types of individuals as part of your job.

In COLUMN A on the answer sheet, using the scale given below, indicate HOW IMPORTANT WOULD YOU WANT CONTACT WITH THE FOLLOWING TYPES OF INDIVIDUALS TO BE ON A JOB.

In COLUMN B on the answer sheet, using the other scale given below, indicate HOW MUCH EXPERIENCE YOU HAVE HAD IN INTERACTING WITH THE TYPES OF PEOPLE LISTED BELOW.

Rating Scale for Column A:

- 0 = no importance
- 1 = very minor importance
- 2 = low importance
- 3 = average importance
- 4 = high importance
- 5 = extreme importance

Rating Scale for Column B:

- 0 = none
- 1 = very limited
- 2 = limited
- 3 = moderate
- 4 = considerable
- 5 = very extensive

- 
- 68. Executives or officials (government administrators, corporation vice-presidents, plant superintendents)
  - 69. Middle management (division or district managers)
  - 70. Supervisors (foremen, office managers)
  - 71. Professional personnel (doctors, lawyers, scientists, engineers, professors, teachers)
  - 72. Semi-professional personnel (technicians, draftmen, designers, photographers, surveyors)
  - 73. Personnel engaged in office work (clerks, bookkeepers, receptionists)
  - 74. Purchasing agents (individuals who buy for companies)
  - 75. Customers (as in stores or restaurants)
  - 76. The general public (such as police officers or park attendants might come into contact with)
  - 77. Students, trainees, or apprentices
  - 78. Clients, patients, or people being counseled
  - 79. Special interest groups (stockholders, property owners, lobbyists)
  - 80. Sales personnel
  - 81. Skilled or unskilled workers (carpenters, bricklayers, laborers)

Section IV:

Following are five job situations or circumstances.

In COLUMN A on the answer sheet, use the scale given below to indicate HOW MUCH OF EACH SITUATION WOULD YOU BE WILLING TO ACCEPT IN YOUR WORK.

In COLUMN B on the answer sheet, use the same scale to indicate HOW MUCH EXPERIENCE YOU HAVE HAD IN WORKING IN THE FIVE TYPES OF SITUATIONS.

Rating Scale for Columns A & B:

- 0 = none
- 1 = very limited
- 2 = limited
- 3 = moderate
- 4 = considerable
- 5 = very extensive

- 
- 82. Frustrating situation (situations in which you would become frustrated because your attempts to do something would be blocked)
  - 83. Unpleasant personal contacts (for example, some types of police work, handling mental patients)
  - 84. Personal sacrifice in the service of others (as might be required by a police officer, minister of a religion, social worker)
  - 85. Disagreements or conflict situations (as might be involved in labor negotiations or the enforcement of an unpopular policy)
  - 86. Distractions (telephone calls, interruptions and disturbances from others)

Section V:

Use the same scale as for Section IV.

In Column A on the answer sheet indicate HOW MUCH YOU WOULD LIKE TO USE EACH OF THE FOLLOWING DEVICES OR PIECES OF EQUIPMENT IN YOUR JOB.

In Column B on the answer sheet indicate HOW MUCH EXPERIENCE YOU HAVE HAD IN USING EACH OF THE FOLLOWING DEVICES OR PIECES OF EQUIPMENT.

- 
- 87. Precision hand tools (engravers' tools, watchmaker's tools, surgical tools)
  - 88. Other hand tools (hammers, wrenches, knives, scissors)
  - 89. Long handled tools (hoes, rakes, shovels, picks, axes, brooms)
  - 90. Handling devices or tools (tongs, ladles, dippers, forceps used for moving or handling objects and materials)
  - 91. Hand held precision power tools (dentist drill, welding equipment)
  - 92. Other hand-held power tools (ordinary power saws, drills, sanders, clippers)
  - 93. Writing and drawing instruments (pens, pencils, artist's brushes)
  - 94. Applicators (brushes, rags, paint rollers used in applying materials)
  - 95. Technical devices (cameras, stopwatches, slide rules)

## Section V (Cont.):

Rating Scale for Columns A & B:

- 0 = none
- 1 = very limited
- 2 = limited
- 3 = moderate
- 4 = considerable
- 5 = very extensive

- 96. Processing machines and equipment (used to process or modify parts, objects, materials)
- 97. Controls: used continuously (controls requiring continual adjustment or manipulation, for example the accelerator or steering wheel of a car)
- 98. Controls: not used continuously (controls used to start or stop, to set positions on a machine, e.g. the volume knob on a t.v.)
- 99. Keyboard devices (pianos, typewriters, adding machines)
- 100. Highway or rail vehicles (automobiles, trucks, buses, trains)
- 101. Powered mobile equipment (fork lifts, self-propelled lawn mowers)
- 102. Powered water vehicles (ships, motor boats)
- 103. Air or space vehicles (planes, helicopters, balloons, gliders)
- 104. Man-moved mobile equipment (hand-pushed lawn mowers, wheel barrows, floor polishers, vacuum cleaners)
- 105. Operating equipment (cranes, hoists, elevators)
- 106. Remote controlled equipment (conveyor systems, etc.)

Section VI:

Using the scale given below, in Column A indicate HOW MUCH OF YOUR WORKING TIME WOULD YOU BE WILLING TO SPEND IN THE FOLLOWING ACTIVITIES OR IN THE FOLLOWING SITUATIONS.

Using the scale given below, in Column B indicate HOW MUCH EXPERIENCE YOU HAVE HAD IN JOBS WHICH REQUIRED LARGE AMOUNTS OF THE FOLLOWING ACTIVITIES OR INVOLVED TO A LARGE EXTENT THE FOLLOWING SITUATIONS.

Rating Scale for Column A:

- 0 = none
- 1 = under 1/10 of the time
- 2 = between 1/10 and 1/3 of the time
- 3 = between 1/3 and 2/3 of the time
- 4 = over 2/3 of the time but not continuously
- 5 = continuously

Rating Scale for Column B:

- 0 = none
- 1 = very limited
- 2 = limited
- 3 = moderate
- 4 = considerable
- 5 = very extensive

- 107. Sitting
- 108. Standing
- 109. Walking or running
- 110. Climbing (e.g. house painter, telephone lineman)

Rating Scale for Column A:

- 0 = none  
1 = under 1/10 of the time  
2 = between 1/10 and 1/3 of the time  
3 = between 1/3 and 2/3 of the time  
4 = over 2/3 of the time but not  
continuously  
5 = continuously

Rating Scale for Column B:

- 0 = none  
1 = very limited  
2 = limited  
3 = moderate  
4 = considerable  
5 = very extensive

- 
111. Kneeling or stooping (or other body positions that may be uncomfortable or awkward)
112. Working indoors in high temperatures (such as in boiler rooms, or around furnaces)
113. Working indoors in low temperatures (conditions in which you would be definitely cold even though you wore warm clothing, such as in refrigerated rooms)
114. Working outdoors (under different weather conditions)
115. Working in contaminated air (dust, fumes, bad odors)
116. Working with vibrating equipment (equipment that vibrates the whole body or limbs, e.g. operating a jack hammer)
117. Working under poor lighting conditions (not enough light, excessive glare)
118. Working under dirty conditions (garages, foundries, coal mines)
119. Working in awkward or small spaces (conditions in which the body is cramped or uncomfortable, e.g. working under houses in small crawl spaces)
120. Traveling

Section VII:

Below are descriptions of 4 degrees of injury that might occur on a job. These injuries range from minor to very serious.

Using the scale given below, in COLUMN A of the answer sheet, indicate THE RISK (OR POSSIBILITY) OF EACH INJURY OCCURRING THAT YOU WOULD BE WILLING TO ACCEPT AS PART OF YOUR WORK.

Using the scale given below, in COLUMN B of the answer sheet, indicate HOW MUCH EXPERIENCE YOU HAVE HAD WORKING IN SITUATIONS WHERE EACH TYPE OF INJURY IS VERY LIKELY.

Rating Scale for COLUMN A:

- 0 = no possibility of occurring
- 1 = very limited possibility of occurring
- 2 = limited possibility of occurring
- 3 = moderate possibility of occurring
- 4 = fairly high possibility of occurring
- 5 = very high possibility of occurring

Rating Scale for COLUMN B:

- 0 = none
- 1 = very limited
- 2 = limited
- 3 = moderate
- 4 = considerable
- 5 = very extensive

- 
- 121. Minor injury or illness which might result in a day or less of lost time
  - 122. Injury or illness which would prevent me from working more than one day, but which would not have any permanent effects
  - 123. Permanent injury or illness resulting in the loss of an arm, leg, hearing, sight in one eye, etc.
  - 124. Permanent total disability or death

Section VIII:

Use the scale for Section VII, Column B for both columns A & B in this section.

In COLUMN A on the answer sheet, indicate HOW MUCH YOU WOULD LIKE EACH OF THE FOLLOWING TO BE PART OF YOUR JOB.

In COLUMN B on the answer sheet, indicate HOW MUCH EXPERIENCE YOU HAVE HAD WORKING IN JOBS WITH THESE TYPES OF CHARACTERISTICS.

- 
- 125. A set specified rate of work (e.g. a auto assembly line)
  - 126. Repetitive activities (repeating the same activity for long periods of time)
  - 127. Cycled work activities (working according to a schedule that repeats weekly, daily or hourly, e.g. a postman or milkman making rounds, a guard patrolling a particular beat)
  - 128. Precision (need to be more than normally precise and accurate)
  - 129. Attention to detail
  - 130. Recognition (need to identify certain objects, events, processes, behavior, e.g. a football referee looking for penalties)
  - 131. Vigilance (need to be constantly alert and aware of changes)
  - 132. Need to keep job knowledge current

## Section IX:

Each of the following items has two parts (A & B). Using the answer sheet, respond to each of the items using the rating scale provided.

- 
133. A. How important would you want competition with other individuals or groups to be in your work (for such things as promotions, recognition, other rewards)? (1) very minor importance, (2) minor importance, (3) moderate importance, (4) high importance, or (5) extreme importance.
- B. How much experience have you had working in jobs that were very competitive in nature? (0) none, (1) very limited, (2) limited, (3) moderate, (4) considerable, or (5) very extensive
134. A. What level of decisions would you want to make in your work?
- (1) low level decisions, e.g. pasting labels on cartons,
  - (2) below average level decisions, e.g. greasing a car, dispatching a taxi,
  - (3) average level decisions, e.g. ordering office supplies, or determining what is wrong with a car,
  - (4) above average decisions, e.g. deciding who will be promoted, or purchasing something fairly expensive, or
  - (5) high level decisions, e.g. recommending major surgery, making very significant personal decisions
- B. Using the following scale, indicate the degree of experience you have had in making each of the following types of decisions.
- Rating scale: 0 = none    1 = very limited    2 = limited  
3 = moderate    4 = considerable    5 = very extensive
1. low level decisions
  2. below average level decisions
  3. average level decisions
  4. above average level decisions
  5. high level decisions
135. A. Which of the following reasoning/problem solving levels would you want your work to involve?
- (1) low (use of common sense to carry out uninvolved instructions)
  - (2) below average (use of some experience or training such as might be done by a sales clerk or keypunch operator)
  - (3) average (use of basic principles to solve common problems)
  - (4) above average (use of logic or scientific thinking as might be used by a mechanical engineer or the manager of a store)
  - (5) high (use of principles or logic or scientific thinking to solve a wide range of relatively complex problems)

- B. Using the following scale, indicate the degree of experience you have had doing activities requiring each of the following reasoning/problem solving levels.

Rating scale: 0 = none 1 = very limited 2 = limited  
3 = moderate 4 = considerable 5 = very extensive

1. low level reasoning/problem solving
2. below average reasoning/problem solving
3. average reasoning/problem solving
4. above average reasoning/problem solving
5. high level of reasoning/problem solving

136. A. How much planning or scheduling would you like to do in your work?

- (0) none
- (1) very little (a little planning of your own activities, as in selling tickets at a theatre)
- (2) little (some planning required, but not a great deal, as in delivering milk, working as a janitor)
- (3) average amount (e.g. a carpenter who must plan the best way to build a table)
- (4) considerable (e.g. a foreman who must plan the activities of a number of subordinates)
- (5) large amount (e.g. a plant manager who must plan the activities of several work groups, an architect)

- B. How much experience have you had in doing activities which required the following amounts of planning/scheduling.

Rating scale: 0 = none 1 = very limited 2 = limited  
3 = moderate 4 = considerable 5 = very extensive

- (0) no planning
- (1) very little planning
- (2) little planning
- (3) average amount of planning
- (4) considerable planning
- (5) large amount of planning

137. A. How much education would you want a job to have?

- 0 = little or none
- 1 = less than a high school degree
- 2 = high school diploma
- 3 = some college education
- 4 = college degree
- 5 = advanced graduate degree (M.S., Ph. D. , M.D., L.L.D.)

- B. How much education do you have?

- 0 = none
- 1 = less than a high school degree
- 2 = high school diploma
- 3 = some college education
- 4 = college degree
- 5 = advanced graduate degree

138. How much training (other than the education in #137) would you want your job to require? (Consider such things as on-the-job training, apprentice training, technical or vocational school training).

0 = 1 day or less  
1 = over 1 day and up to one month  
2 = over 1 month and up to 6 months  
3 = over 6 months and up to 1 year  
4 = over 1 year and up to 3 years  
5 = over 3 years

(Note: there is no part B on question 138)

139. How much work experience in related or lower level jobs would you like your job to require?

0 = less than 1 month  
1 = over 1 month but less than 1 year  
2 = one year up to 3 years  
3 = three years up to 5 years  
4 = five years or more

(Note: there is no part B on question 139)

140. A. What is the highest level of mathematics you would like your job to require?

0 = none  
1 = simple counting, addition and subtraction of numbers less than 100  
2 = addition and subtraction of numbers up to 1000, and some multiplication and division  
3 = use of fractions, decimals, percentages  
4 = use of algebra, geometry, trigonometry, or statistics  
5 = advanced use of calculus, topology, vector analysis, factor analysis, probability theory

- B. What is the highest level of mathematics you would consider yourself "good at?"

0 = none  
1 = simple counting, addition and subtraction of numbers less than 100  
2 = addition and subtraction of numbers up to 1000, and some multiplication and division  
3 = use of fractions, decimals, percentages  
4 = use of algebra, geometry, trigonometry, or statistics  
5 = advanced use of calculus, topology, vector analysis, factor analysis, probability theory

## Section IX (Cont.)

141. A. How much physical effort would you want your work to require?
- (1) very light (occasional walking or standing, occasional moving of light objects)
  - (2) light (frequently walking or standing, and often exerting effort equal to that which would be needed to lift 10 or 20 pounds)
  - (3) moderate (frequently exerting effort equal to that which would be required to lift 25-50 lbs.)
  - (4) heavy (lifting 50-100 lbs. occasionally)
  - (5) very heavy (frequently lifting 50-100 lbs.)
- B. What level of physical effort do you feel you could reasonably be able to exert on a job?
- (1) very light
  - (2) light
  - (3) moderate
  - (4) heavy
  - (5) very heavy
142. A. How many workers would you want to directly supervise?
- 0 = none
  - 1 = 1 or 2
  - 2 = 3 to 5
  - 3 = 6 to 8
  - 4 = 9 to 12
  - 5 = 13 or more
- B. How many workers have you supervised previously?
- 0 = none
  - 1 = 1 or 2
  - 2 = 3 to 5
  - 3 = 6 to 8
  - 4 = 9 to 12
  - 5 = 13 or more
143. A. How many workers would you want to be personally responsible for even though you did not directly supervise them?
- 0 = none
  - 1 = 10 or fewer workers
  - 2 = 11 to 50
  - 3 = 51 to 250
  - 4 = 251 to 750
  - 5 = more than 750 workers
- B. How many workers have you previously been responsible for even though you may not have directly supervised them?
- 0 = none
  - 1 = 10 or fewer
  - 2 = 11 to 50
  - 3 = 51 to 250
  - 4 = 251 to 750
  - 5 = more than 750

144. A. How much responsibility for the safety of others would you be willing to assume in your work?
- 0 = none
  - 1 = little (working with only small hand tools, machines that are not dangerous)
  - 2 = limited (responsible to exercise only reasonable care)
  - 3 = intermediate (must be careful to avoid hurting others, as in operating overhead cranes, driving a vehicle)
  - 4 = substantial (must constantly be careful not to injure others, as in handling dangerous chemicals or explosives)
  - 5 = very substantial (the safety of others would depend entirely on you, as in piloting an aircraft, performing major surgery)
- B. What is the highest level of responsibility for others that you have assumed previously?
- 0 = none
  - 1 = little
  - 2 = limited
  - 3 = intermediate
  - 4 = substantial
  - 5 = very substantial
145. A. How much property would you be willing to take responsibility for?
- 1 = very little (a few dollars worth)
  - 2 = little (\$50 to \$500)
  - 3 = moderate amount (\$501 to \$5000)
  - 4 = substantial amount (\$5001 to \$25,000)
  - 5 = very substantial amount (\$25,001 or more)
- B. What is the highest value of property you have previously been responsible for?
- 1 = very little
  - 2 = little
  - 3 = moderate amount
  - 4 = substantial amount
  - 5 = very substantial amount
146. A. How much general responsibility would you want in your work?
- 1 = very little
  - 2 = little
  - 3 = average amount
  - 4 = substantial
  - 5 = very substantial
- B. How much general responsibility have you previously assumed in a job?
- 1 = very little
  - 2 = little
  - 3 = moderate amount
  - 4 = substantial
  - 5 = very substantial

147. A. How much supervision would you want to receive in a job?  
0 = no supervision  
1 = very little direction or guidance  
2 = general guidance but quite independent from others  
3 = general supervision  
4 = close supervision including job assignments and close observation of work
- B. Generally, how much supervision have you received in past jobs?  
0 = no supervision  
1 = very little direction or guidance  
2 = general guidance but quite independent from others  
3 = general supervision  
4 = close supervision including job assignments and close observation of work
148. A. To what extent would you want to follow a routine, or have your work outlined for you?  
1 = almost no change from a predetermined work schedule  
2 = little change from routine work as possible  
3 = certain work must be done, but you can determine your own routine or schedule  
4 = little routine work, most of the decisions are made by you  
5 = no routine work
- B. In the past, to what extent have you followed a routine work schedule set for you by someone else?  
1 = almost no change from routine work  
2 = little change from routine work  
3 = certain work had to be done, but I determined by own schedule  
4 = little routine work done  
5 = no routine work
149. Some positions in a company are particularly critical. If not properly filled the company's earnings or reputation might suffer.
- A. What degree of "criticality" would you like your job to have?  
1 = very low 2 = low 3 = moderate  
4 = high 5 = very high
- B. Generally, what degree of criticality has been associated with the positions you have held in the past?  
1 = very low 2 = low 3 = moderate  
4 = high 5 = very high
150. A. How important would you like civic obligations to be part of your job (e.g. helping with United Fund)  
0 = no importance 1 = very minor 2 = low  
3 = average 4 = high 5 = extreme importance
- B. To what extent have you had experience in working with civic organizations in the past?  
0 = none 1 = very limited 2 = limited  
3 = moderate 4 = considerable 5 = very extensive

LIST 1  
MANDATORY

Defense Technical Information Center  
ATTN: DTIC DDA-2  
Selection and Preliminary Cataloging Section  
Cameron Station  
Alexandria, VA 22314

Library of Congress  
Science and Technology Division  
Washington, DA 20540

Office of Naval Research  
Code 452  
800 N. Quincy Street  
Arlington, VA 22217

Naval Research Laboratory  
Code 2627  
Washington, DC 20375

Office of Naval Research  
Director, Technology Programs  
Code 200  
800 N. Quincy Street  
Arlington, VA 22217

Office of Naval Research  
Code 450  
800 N. Quincy Street  
Arlington, VA 22217

Office of Naval Research  
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800 N. Quincy Street  
Arlington, VA 22217

Office of Naval Research  
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Psychologist  
ONR Western Regional Office  
1030 E. Green Street  
Pasadena, CA 91106

ONR Regional Office  
536 S. Clark Street  
Chicago, IL 60605

Psychologist  
ONR Regional Office  
536 S. Clark Street  
Chicago, IL 60605

Psychologist  
ONR Eastern/Central Regional  
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ONR Eastern/Central Regional  
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Personnel, and Training  
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NAVMAT 09M32  
Jefferson Plaza, Bldg. #2, Rm. 150  
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Naval Material Command  
NAVMAT-00K  
Washington, DC 20360

Naval Material Command  
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Washington, DC 20360

Naval Material Command  
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Crystal Plaza #5  
Room 236  
2211 Jefferson Davis Highway  
Arlington, VA 20360

NPRDC

Commanding Officer  
Naval Personnel R&D Center  
San Diego, CA 92152

Navy Personnel R&D Center  
Washington Liaison Office  
Building 200, 2N  
Washington Navy Yard  
Washington, DC 20374

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San Diego, CA 92152

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Psychology Department  
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Research Laboratory  
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Director, Medical Service Corps  
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Naval Air Station  
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Program Manager for Human  
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Naval Medical R&D Command  
National Naval Medical Center  
Bethesda, MD 20014

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Naval Military Personnel Command  
HRM Department (NMPC-6)  
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Naval Training Analysis and  
Evaluation Group  
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Commanding Officer  
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Chief of Naval Education  
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Naval Air Station  
Pensacola, FL 32508

Chief of Naval Technical Training  
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Commanding Officer  
USS Carl Vinson (CVN-70)  
Newport News Shipbuilding &  
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Newport News, VA 23607

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Headquarters, U.S. Marine Corps  
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Washington, DC 20380

Headquarters, U.S. Marine Corps  
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Quantico, VA 22134

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Room 7 - 102  
5600 Fishers Lane  
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